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EDITORIAL

Bulletin No. 13 is dedicated to the memory of Patrick Browne (1720-1790) who was one of the pioneers in Irish natural history. Born at Woodstock, Co. Mayo, a short description of his life is given in R. Lloyd Praeger's Some Irish Naturalists. He obtained a M.D. at Leyden where he formed an intimacy with Linnaeus and other noteworthy men. His Fasciculus Plantarum Hiberniae (ms) has survived and is preserved in the library of the Linnean Society. He published catalogues of the birds and fishes of Ireland in Exshaw's Magazine (1774). He made many visits to the West Indies where he collected extensively. His most important work (1756, 2nd edition 1765) dealt with the natural history of Jamaica.

With the improving financial state of the Society, it has been possible this year to publish all the accepted papers in one Bulletin. However due to its large size, this has been issued in two parts.

On behalf of the Irish Biogeographical Society, I wish to thank Dr A. McNally, Assistant Editor, our typist Mrs R. Holmes, Mr J. M. C. Holmes, our referees, the members of the Editorial Sub-Committee and the General Committee, and all those who helped with the production of this Bulletin. In addition, the Society is also grateful to Dr F. Jeal for suggesting the dedication to Patrick Browne, and to Dr P. F. Wallace for arranging for the National Museum of Ireland to become one of the Bulletin's sponsors.

J. P. O'Connor,
Editor,
24 August 1990.

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STAPHYLINID BEETLES (COLEOPTERA) FROM CEREAL AND GRASS FIELDS IN SOUTH-WEST IRELAND.

J. A. Good and P. S. Giller

Introduction

The European staphylinid fauna of arable land and grasslands is incompletely known, despite the potential importance of staphylinids in biological pest control (Good and Giller, 1988). The results of a survey of staphylinid beetles, based on pitfall trapping and D-Vac suction sampling, of forty-nine sites in south-west Ireland, are given here.

Methods

The majority of the study sites were on commercial farms, and included winter and spring cereals under different types of management, silage fields, reseeded hay meadows, and permanent meadows and pastures with minimal grazing. Collecting was carried out in June and July 1986, using four 6cm diameter plastic cup pitfall traps per site, with ethylene glycol as preservative, and three D-Vac samples per site, each sample covering an area of approximately $1.1m^2$.

Locations and sampling dates are shown in Table 1. Forty-one sites were in Cork, three in Kerry, three in Tipperary, and one each in Waterford and Offaly. Six sites were not sampled by D-Vac as the crop was too wet for the machine to function efficiently, and three different sites had pitfall traps damaged or removed by crows (*Corvus cornix cornix* L.), and so lack results also. These sites are indicated in Table 1. Numbers of individuals per species represent totals per

site for pitfall traps and D-Vac respectively.

A range of taxonomic works was consulted for the identification of the species collected, and voucher specimens for all species recorded as more than a single individual in the whole study have been deposited in the National Museum of Ireland. Atheta amplicollis (Mulsant and Rey) could not be satisfactorily separated from A. fungi (Gravenhorst) in this study, so these species are listed as A. fungi sensu lato. Females of Quedius aridulus Jansson could not be distinguished from females of Q. boops (Gravenhorst), and these are likewise treated together as a species group. Four varieties were also distinguished (the argument for this is given in Good, 1988), though one (Tachyporus hypnorum (F.) var.armeniacus Kolenati agg.) consisted of an aggregate of specimens with dark elytra (var. armeniacus) and/or dark maxillary palps, this being a non-taxonomic grouping but the only means of accomodating colour variation in this species.

Results

Ninety-eight species of adult Staphylinidae were collected in total, and are listed in Table 2. Pitfall trap and D-Vac sample catches are presented in Table 3. Analysis of these data in relation to recorded management and environmental factors is given elsewhere (Good and Giller, in preparation).

Discussion

Staphylinid adults found commonly in European cereal crops are listed by Good and Giller (1988). Several species were found to be common in this study, in at least one cereal field, which are absent from the above list (see Table 4). One group includes three species which were atypically common in one south-facing coastal site

(Ballinspittle wheat, Table 4): Omalium excavatum (Stephens), Atheta triangulum (Kraatz) and A. amicula (Stephens). O. excavatum occurred more commonly in coastal sites compared with inland sites, and it is possible that this group may indicate a climatic zone (such as a high level of frost-free days) along the south coast. A second group includes four Stenus species. These occurred in cereal fields with no insecticide application and surrounded by damp grasslands, a management-and-landscape combination unusual in much of Europe. Nine species which were absent or rare in this study but listed in Good and Giller (1988) are also given in Table 4. Some of these species were likely to have had low populations in 1986 due to high mortality as a result of parasitism, poor overwintering success, etc. Lathrobium fulvipenne (Gravenhorst) is probably one of these; it was common in at least one of the study sites in 1985. Anotylus sculpturatus (Gravenhorst) and Tachyporus solutus Erichson may also belong to this group. Other species, for ecological or climatic reasons, may find Irish cereal fields of the type examined unsuitable as a habitat. As the soils of the sites examined in this study did not include, for instance, clay, sand and peat, it would be premature to put the absence or rarity of any of these species to climatic rather than ecological causes.

In the case of grassland staphylinids, a comparison such as that for cereals in Table 4 is not worthwhile, as fewer studies are listed for grass (Good and Giller, 1988) and there is also a much greater variety of grassland types. It is likely, nevertheless, that damp pastures in Ireland may contribute several species to an eventual check list of common species in northern Europe, especially in the genus Stenus (see habitat data in Anderson, 1984). Species occurring commonly in any of the grassland sites in this study, but not listed in Good and Giller (1988) are given in Table 5.

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Acknowledgements

Special thanks are due to the many landowners who allowed access to their land, and in particular to Mark Newenham and Michael Barry. We are also grateful to Mr S. O'Donovan (Fota Farm, University College Cork) and Dr J. Larner (Killarney National Park, OPW) for permission to work on these lands. Thanks are also due to Mr P. M. Hammond for checking several identifications, to Mr P. Carrigan, Meteorological Service, for supplying weather records, and to Dr J. P. O'Connor for access to the National Museum reference collections.

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TABLE 1: List of sites.

Crop types: ww: winter wheat, wo: winter oats, sb: spring barley, so: spring oats, sw: spring wheat, si: silage, ms: manured silage, hm: hay meadow, op: old pasture.

Column headings: a - cumulative degrees greater than 10° C for trapping period as recorded from most representative Meteorological Station. b - pitfall trap (P) or D-Vac (D) data (sites where pitfall traps were flooded are asterisked). c - sampling dates for pitfall traps and D-Vac, respectively.

All dates are 1986, and all sites are in Co. Cork unless otherwise indicated (Ke: Kerry, Of: Offaly, Ti: Tipperary, Wa: Waterford). (Note: a site may be in a different county to the nearest town).

Location	Grid ref.	No.trap days	a	b	c
Kinsale ww	W631512	20	78.4	P/D	11.vi-1.vii/21.vii
Ballinspittle ww	W563462	20	78.4	P/D	11.vi-1.vii/12.vii
Riverstick ww(1)	W664583	27	111.4	P/D	14.vi-11.vii/21.vii
Churchtown ww(1)	W924742	22	93.5	P/D	12.vi-4.vii/4.vii
Shanagarry ww	W948677	20	83.5	P/D	12.vi-2.vii/16.vii
Riverstick ww(2)	W663588	19	84.2	P	13.vi-2.vii
Ballineen ww	W311531	27	115.7	P/D	13.vi-10.vii/10.vii
Riverstick ww(3)	W664583	21	81.4	P/D	11.vi-2.vii/21.vii
Carrigaline ww(1)	W758625	18	81.4	P/D	16.vi-4.vii/7.vii
Carrigaline ww(2)	W761625	18	81.4	P/D	16.vi-4.vii/7.vii
Mount Uniacke wo	X031829	16	65.9	P	16.vi-2.vii
Ballynacorra ww	W878712	30	143.4	P/D	16.vi-16.vii/16.vii
Castletownroche wo	R673029	27	137.1	P/D	17.vi-14.vii/14.vii
Kanturk ww	R426031	28	147.1	P/D	17.vi-15.vii/15.vii
Cahir ww(Ti)	S061209	27	145.7	P*/D	20.vi-17.vii/14.vii
Ovens ww(1)	W515714	28	138.1	P*/D	21.vi-19.vii/19.vii
Ovens ww(2)	W538683	30	149.1	P/D	21.vi-21.vii/21.vii
Curraglass ww	W959946	33	184.4	P/D	23.vi-26.vii/26.vii
Tallow ww(Wd)	X033928	25	144.8	P/D	23.vi-18.vii/18.vii
Churchtown ww(2)	W926739	27	139.5	P/D	23.vi-20.vii/4.vii
Kinsale sb	W613511	22	87.5	P/D	11.vi-3.vii/21.vii
Fota sb	W790718	19	78.4	P/D	12.vi-1.vii/20.vii
Riverstick sb(1)	W664591	20	83.6	P	13.vi-3.vii
Glandore so	W240365	19	84.0	P/D	14.vi-3.vii/3.vii
Castlemartyr sb	W987727	30	143.4	P/D	16.vi-16.vii/16.vii
Cahir sw(Ti)	S061206	27	145.7	P*/D	20.vi-17.vii/14.vii
Holycross sb(Ti)	S122578	16	83.2	P	20.vi-6.vii
Ballingeary sb	W153671	19	83.7	P	21.vi-10.vii
Muckross so(Ke)	V971864	17	90.9	P/D	22.vi-9.vii/9.vii
Rathcormack so	W821905	20	109.3	P/D	23.vi-13.vii/13.vii
Balllymartle sb	W621570	28	142.5	P/D	24.vi-22.vii/11.vii

Riverstick sb(2)	W672586	25	130.3	P/D	24.vi-19.vii/19.vii
Fota ms	W790718	-	-	D	20.vii
Fota si	W788716	19	78.4	P/D	12.vi-1.vii/20.vii
Castlemartyr si	W964730	-	-	D	4.vii
Dunmanway ms	W187512	27	111.2	P/D	13.vi-10.vii/10.vii
Carrigaline si	W767617	18	81.4	P/D	16.vi-4.vii/7.vii
Killeagh ms	W995769	16	65.9	P/D	16.vi-2.vii/30.vi
Dunmanway hm(1)	W217534	15	59.2	P/D	13.vi-28.vii/28.vi
Dunmanway hm(2)	W188511	15	59.2	P	13.vi-28.vi
Glandore Festucahm	W240369	19	84.0	P/D	14.vi-3.vii/27.vi
Glandore Holcus hm	W240369	19	84.0	P/D	14.vi-3.vii/27.vi
Glandore hm(3)	W239370	19	84.0	P/D	14.vi-3.vii/27.vi
Ardfield op	W355350	19	84.0	P/D	14.vi-3.vii/12.vii
Mount Uniacke hm	X032837	16	65.9	P/D	16.vi-2.vii/30.vi
Roscrea op (Of)	S110918	16	96.0	P/D	19.vi-5.vii/5.vii
Courtmacsherry op	W519425	-	-	D	28.vi
Muckross hm (Ke)	V954863	17	90.9	P/D	22.vi-9.vii/9.vii
Killarney hm(Ke)	V953908	17	90.9	P/D	22.vi-9.vii/9.vii

(Meteorological Stations: Birr, Cork Airport, Fethard, Fermoy, Killarney, Roches Point).

TABLE 2: List of species:
Nomenclature follows Pope (1977) and Booth (1988)

Aleochara bipustulata (L.)
Aleochara lanuginosa Gravenhorst
Aloconota coulsoni (Last)
Aloconota gregaria (Erichson)
Amischa analis (Gravenhorst)
Amischa decipiens (Sharp)
Amischa soror (Kraatz)
Anotylus rugosus (F.)
Anotylus sculpturatus (Gravenhorst)

Anotylus tetracarinatus (Block)
Atheta amicula (Stephens)
Atheta aterrima (Gravenhorst)
Atheta atramentaria (Gyllenhal)
Atheta elongatula (Gravenhorst)
Atheta fungi (Gravenhorst) (sensu lato)
Atheta graminicola (Gravenhorst)
Atheta intermedia (Thompson, C. G.)
Atheta laticollis (Stephens)
Atheta ravilla (Erichson)
Atheta triangulum (Kraatz)
Bryoporus analis (F.)
Callicerus obscurus Gravenhorst
Carpelimus pusillus (Gravenhorst)
Cordalia obscura (Gravenhorst)
Dinaraea angustula (Gyllenhal)
Drusilla canaliculata (F.)
Encephalus complicans Stephens
Gabrius pennatus Sharp
Geostiba circellaris (Gravenhorst)
Gyrohypnus angustatus Stephens
Gyrohypnus fracticornis (Müller, O.F.)
Lathrobium fulvipenne (Gravenhorst)
Lathrobium ripicola Czwalina
Lioqluta longiuscula (Gravenhorst)
Megarthrus depressus (Paykull)
Metopsia retusa (Stephens)
Micropeplus porcatus (Paykull)
Mycetoporus lepidus (Gravenhorst)
Mycetoporus longulus Mannerheim
Mycetoporus splendidus (Gravenhorst)
Oligota inflata (Mannerheim)
Omalium excavatum (Stephens)
Ontholestes murinus (L.)

Oxypoda alternans (Gravenhorst)
Oxypoda brachyptera (Stephens)
Oxypoda elongatula Aubé
Oxypoda exoleta Erichson
Oxypoda haemorrhoa (Mannerheim)
Oxypoda umbrata (Gyllenhall)
Oxytelus laqueatus (Marsham)
Philinorum sordidum (Stephens)
Philonthus cognatus Stephens
Philonthus laminatus (Creutzer)
Philonthus longicornis Stephens
Philonthus marginatus (Ström)
Philonthus nitidicollis (Boisduval and Lacordaire)
Philonthus politus (L.)
Philonthus sanguinolentus (Gravenhorst)
Philonthus sordidus (Gravenhorst)
Philonthus splendens (F.)
Philonthus varius (Gyllenhal)
Proteinus ovalis Stephens
Quedius aridulus Jansson
/boops (Gravenhorst)
Quedius fuliginosus (Gravenhorst)
Quedius schatzmayri Gridelli
Quedius semiobscurus (Marsham)
Quedius tristis (Gravenhorst)
Rugilus erichsoni (Fauvel)
Rugilus orbiculatus (Paykull)
Sepedophilus nigripennis (Stephens)
Staphylinus dimidiaticornis Gemminger
Staphylinus olens Müller, O.F.
Stenus brunnipes Stephens
Stenus cicindeloides (Schaller)
Stenus clavicornis (Scopoli)
Stenus flavipes Stephens

Stenus fulvicornis Stephens
Stenus impressus Germar
Stenus juno (Paykull)
Stenus nanus Stephens
Stenus ossium Stephens
Stenus picipes Stephens
Stenus similis (Herbst)
Stenus tarsalis Ljungh
Sunius propinquus (Brisout)
Tachinus laticollis Gravenhorst
Tachinus marginellus (F.)
Tachinus signatus Gravenhorst
Tachyporus chrysomelinus (L.)
Tachyporus chrysomelinus (L.)
  var. basalis Eppelsheim
Tachyporus chrysomelinus (L.)
  var. maculicollis Luze
Tachyporus dispar (Paykull)
Tachyporus hypnorum (F.)
Tachyporus hypnorum (F.)
  var. armeniacus Kolenati agg*
Tachyporus nitidulus (F.)
Tachyporus obtusus (L.)
  var. nitidicollis Stephens
Tachyporus pusillus Gravenhorst
Tachyporus solutus Erichson
Tinotus morion (Gravenhorst)
Xantholinus glabratus (Gravenhorst)
Xantholinus linearis (Oliver)
Xantholinus longiventris Heer

* includes individuals with dark elytra (var.armeniacus)and/or with dark maxillary palpi

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TABLE 3: Staphylinid species and numbers of individuals captured at sites studied.

Species abbreviations are the first letter of the genus and the first three letters of the species name, with the following exceptions: Co os is Cordalia obscura and Ca oa is Callicerus obscurus; T hva, T cvb, T cvm are Tachyporus hypnorum var. armeniacus agg., T. chrysomelinus var. basalis and T. c. var. maculicollis respectively. Qb/a is Quedius boops/aridulus. Crop abbreviations are given in Table 1. Replicates of samples (repl.) for pitfall trap sites are given at the end of the pitfall trap list.

PITFALL TRAP RESULTS

Ballineen w.wheat		Ballinspittle w.wheat		Ballynacorra w.wheat		Cahir w.wheat		Castletownroche w.oats	
T sig	126	A tri	27	A fun	78	A fun	17	T sig	60
A fun	87	O exc	23	A gre	60	A gre	14	A fun	26
A rug	7	T sig	22	A rug	11	X lin	13	A tri	9
T hyp	6	A fun	12	T sig	10	X lon	5	P lam	7
P cog	5	A gre	9	O exc	8	G ang	3	A rug	6
T chr	5	A ami	9	P cog	7	A rug	1	G ang	6
A gre	4	A rug	6	A tri	4	G fra	1	P cog	5
G ang	4	T hyp	5	T hyp	3	M lon	1	P var	2
T obt	4	P cog	4	A dec	2	O exo	1	Q sch	2
P lam	2	P lam	4	O alt	2	P cog	1	A ami	1
P var	2	G ang	3	P var	2	S cla	1	A ana	1
T lat	2	P var	2	T lat	2	S bru	1	M por	1
X lon	2	T chr	2	A ana	1	S pro	1	O exc	1
A elo	1	T obt	2	A sor	1			O exo	1
A gra	1	A tet	1	Q sch	1			T lat	1
T nit	1	O exo	1	S pro	1			T chr	1
		S nig	1	T mor	1			T hyp	1
		T nit	1	X lin	1			T obt	1
								X lin	1

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Carrigaline w.wheat(1)		Carrigaline w.wheat(2)		Churchtown w.wheat(1)		Churchtown w.wheat(2)		Curraglass w.wheat	
A gre	36	T sig	31	A fun	26	A gre	144	A gre	63
T sig	22	A gre	25	P lam	7	A fun	36	A fun	34
A fun	20	A fun	23	T hyp	7	A rug	9	T sig	33
T hyp	9	P cog	4	A rug	6	A tri	5	A rug	16
X lon	8	P var	3	O exc	5	A scu	2	O umb	5
G ang	4	X lon	3	A gre	4	T hyp	2	A tri	4
O exo	3	A rug	2	A tri	4	G ang	1	A exo	2
P lam	3	A ami	2	T obt	4	M lon	1	T chr	2
T hva	3	T hyp	2	A ami	1	O exc	1	A ana	1
X lin	3	A tet	1	A ana	1	P cog	1	T hyp	1
A rug	2	A ana	1	M por	1	P var	1		
P cog	2	O exc	1	P var	1	R orb	1		
T nit	2	P lam	1	P cog	1	S pro	1		
T obt	2	T obt	1	T chr	1	T nit	1		
A lan	1					X lin	1		
A tri	1								
A ana	1								
G pen	1								
P var	1								
S pro	1								
T pus	1								

Kanturk w.wheat		Kinsale w.wheat		Mount Uniacke w.oats		Ovens w.wheat(1)		Ovens w.wheat(2)	
A fun	37	A fun	19	T hyp	21	A fun	19	A fun	14
T hyp	23	T sig	13	A fun	14	A rug	6	T sig	10
T sig	16	T hyp	11	A rug	12	P cog	3	A gre	9
P cog	6	A gre	9	G ang	10	G ang	2	P cog	6
G cir	5	P cog	8	O exo	9	X lin	2	X lin	6
A rug	4	A rug	6	A gre	6	A tet	1	G ang	5
G ang	4	G ang	5	X lon	6	A gre	1	M lon	4
T chr	4	O exc	3	T sig	5	M por	1	A tri	3
T obt	4	O exo	3	P cog	2	Q tri	1	O exo	3
T lat	3	P lam	3	Q sch	2	T dis	1	P var	3
A gre	2	T chr	3	X lin	2			T obt	3
Ca os	2	X lin	3	A cou	1			P lam	2
P lam	2	T obt	2	A tri	1			S pic	2
T hva	2	T nit	2	O umb	1			T chr	2
X lin	2	A sor	1	P lam	1			M por	1
M por	1	P var	1	S nan	1			Q sch	1
P var	1			T chr	1			Q tri	1
X lon	1			T obt	1			S pro	1
				T nit	1			S sim	1
								T hyp	1
								X gla	1

Riverstick w.wheat(1)		Riverstick w.wheat(2)		Riverstick w.wheat(3)		Shanagarry w.wheat		Tallow w.wheat	
A fun	72	A fun	28	A fun	19	A fun	46	A fun	39
T sig	42	A rug	13	T sig	19	A gre	14	T sig	26
T hyp	25	X lon	12	P lam	11	P lam	13	A gre	15
P lam	24	P lam	6	T hyp	8	T hyp	12	X lin	13
P cog	19	A gre	4	T chr	6	A tri	8	X lon	7
P var	8	X lin	4	T hva	5	T sig	7	Ca os	4
X lin	8	T sig	3	P cog	3	P cog	6	T chr	4
A rug	3	T hyp	3	T nit	3	O exc	3	A rug	3
A ana	2	P var	2	A ana	2	O exo	3	T hva	2
T nit	2	P cog	2	T obt	2	T obt	3	A ana	1
X lon	2	S pro	2	A rug	1	L lon	1	O exo	1
A tri	1	Q sch	1	A lat	1	A rug	1	P lam	1
D ang	1	T chr	1	Q sch	1	G ang	1	P var	1
G ang	1			S nig	1	P var	1	Q tri	1
T hva	1			S pro	1	T lat	1	S pro	1
T obt	1			X lin	1	T chr	1	T nit	1
T chr	1					T nit	1		
						T mor	1		
						T hva	1		
						X lon	1		

Ballingeary s.barley		Ballymartle s.barley		Cahir s.wheat		Castlemartyr s.barley		Fota s.barley	
A rug	11	T sig	143	A gre	14	A fun	33	A gre	28
A gre	7	P cog	57	A fun	12	A gre	19	A rug	26
P cog	6	A fun	54	X lin	3	T hyp	17	P cog	16
G ang	5	A gre	54	S pro	2	A rug	15	A fun	13
P lam	3	P var	30	T sig	2	P lam	9	P lam	13
A fun	2	T hyp	21	T hyp	2	T sig	7	T hyp	13
P var	2	P lam	17	X lon	2	T obt	5	T obt	8
X lin	2	A rug	12	G ang	1	O umb	3	T chr	7
A ana	1	G ang	6	L ful	1	L lon	2	G fra	6
A elo	1	X lon	6	P lam	1	P var	2	L lon	4
E com	1	M lon	5	P cog	1	A lan	1	T sig	3
T pus	1	A lan	3	P var	1	A sor	1	T pus	2
		S sim	3	S sim	1	P cog	1	T nit	2
		T obt	2	T obt	1	T hva	1	A sor	1
		T chr	2	T nit	1	T mor	1	A tet	1
		A ana	1					A lat	1
		L lon	1					G ang	1
		L rip	1					P sor	1
		P san	1					P mar	1
		S oss	1					P nit	1
								P spl	1
								P pol	1

Glandore s.oats		Holycross s.barley		Kinsale s.barley		Muckross s.oats		Rathcormack s.oats	
A rug	40	A gre	11	T hyp	61	P cog	39	A gre	12
A gre	19	A fun	8	A gre	42	A gre	10	T sig	11
G ang	16	T sig	8	P cog	32	A rug	6	A rug	9
A fun	3	A rug	7	A fun	23	G ang	5	T hyp	4
T obt	3	P var	5	A rug	12	P lam	3	A fun	2
A ana	2	P cog	5	X lon	8	T chr	2	Q sch	2
G fra	2	T hyp	4	T hva	4	A ana	1	R eri	2
T hyp	2	T hva	2	A ana	2	A bip	1	T chr	2
T nit	2	A ami	1	P var	2	G pen	1	T obt	2
T chr	2	L ful	1	T nit	2	O exo	1	X lon	2
A tri	1	M por	1	T obt	2	S cla	1	A dec	1
D can	1	P lam	1	X lin	2	S nan	1	G pen	1
L rip	1	S nan	1	A sor	1	S ole	1	L lon	1
T cvb	1	T chr	1	A dec	1	T nit	1		
T mor	1			C pus	1	X lon	1		
				G ang	1				
				P lam	1				
				Q tri	1				
				T pus	1				

Riverstick s.barley(1)		Riverstick s.barley(2)		Carrigaline silage		Dunmanway man.silage		Fota silage	
P cog	29	A gre	135	P var	14	P var	4	A bip	21
A fun	24	A fun	65	A bip	8	A tet	3	A gre	6
A gre	23	A rug	29	A fun	2	A gre	2	P var	4
T hyp	10	T sig	28	A gre	2	P cog	2	T pus	4
A rug	5	G ang	16	O bra	2	A rug	1	X lon	4
G ang	5	P cog	15	Q sch	2	A ate	1	A rug	3
P lam	5	T hyp	15	A ana	1	A elo	1	A fun	3
Co oa	3	P lam	8	A ate	1	G ang	1	P nit	2
O exo	3	T obt	4	A tet	1	O mur	1	P cog	2
T hva	3	A tri	3	G fra	1	S nan	1	X lin	2
A tet	1	A ana	3	P cog	1	T dis	1	A ate	1
A sor	1	T mor	3	P lam	1	T sig	1	G pen	1
T obt	1	T chr	3	T hyp	1			O umb	1
T nit	1	T nit	2					T chr	1
T sig	1	T hva	2						
		A sor	1						
		P var	1						
		X lon	1						

Killeagh man.silage	Ardfield old pasture	Dunmanway h.meadow(1)	Dunmanway h.meadow(2)	Glandore *Festuca* h.m.
P lam 14	T sig 69	T sig 18	P lam 13	A fun 24
A fun 11	G cir 16	A fun 9	T sig 10	S dim 21
T hyp 10	A fun 10	P lam 7	P cog 5	T sig 11
P var 6	S dim 4	P cog 4	P var 2	A rug 6
P cog 5	S cla 3	T hva 2	A gre 1	T dis 2
T obt 5	X lon 3	A gre 1	O elo 1	G cir 1
A gre 4	Q ful 2	G pen 1	R orb 1	P var 1
T sig 4	S nig 2	P var 1	S cla 1	Q sch 1
A tet 2	T dis 2	T chr 1	S jun 1	Q tri 1
A rug 1	A ana 1	X lin 1	T lat 1	S ful 1
A ate 1	P lam 1			T cvm 1
Q sch 1	Q sch 1			X lin 1
S cla 1	Q b/a 1			
T cvm 1	X lin 1			
T chr 1				
T hva 1				
T pus 1				

Glandore *Holcus* h.m.	Glandore h.meadow(3)	Killarney h.meadow	Mount Uniacke h.meadow	Muckross h.meadow
T sig 19	T sig 18	S dim 22	A fun 18	T sig 11
S dim 15	A fun 10	T sig 22	P lam 13	A fun 10
G cir 9	P lam 9	S cla 3	T sig 8	P cog 3
A fun 8	Q b/a 9	T dis 3	P var 6	X lon 3
A rug 3	P var 3	X lin 3	T lat 5	A ana 2
X lin 2	T nit 3	P cog 2	P cog 3	G cir 2
P var 1	S pic 2	R eri 2	S cla 3	Q sem 2
Q boo 1	S nan 2	X lon 2	Q sch 2	Co oa 1
S cla 1	X lon 2	A fun 1	B ana 1	Ca os 1
S bru 1	S cla 1	A ana 1	M spl 1	E com 1
S ful 1	T lat 1	P var 1	O umb 1	P mar 1
S oss 1	T hyp 1	S bru 1	Q boo 1	S oss 1
T chr 1	T pus 1	T lat 1	T nit 1	
T dis 1	T hva 1			
X lon 1	T obt 1			
	T chr 1			

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Roscrea old pasture		Carrigaline w.w.(repl.)		Kanturk w.w.(repl.)		Kinsale w.w.(repl.)		Ballingeary s.b.(repl.)	
D can	2	A gre	21	T hyp	29	T sig	24	A rug	16
T sig	2	A fun	21	T sig	29	A fun	19	A gre	14
A ana	1	T sig	21	A fun	20	A rug	15	P cog	8
S pro	1	X lon	13	G cir	6	A gre	13	G ang	6
T dis	1	A ana	3	P cog	5	T hyp	9	A fun	5
T pus	1	G ang	3	T hva	5	P lam	8	T obt	3
X lon	1	P var	3	P lam	3	G ang	5	A elo	2
		P cog	3	X lin	3	P cog	4	P var	2
		T hyp	3	C obs	2	X lon	4	P lam	2
		A rug	2	G ang	2	O exc	2	X lin	2
		X lin	2	T chr	2	P var	2	O laq	1
		A tri	1	T obt	2	T obt	2	S sim	1
		G pen	1	A gre	1	T hva	2	S oss	1
		O exo	1	A tri	1	T nit	2	T sig	1
		T nit	1	Q tri	1	A ana	1	T chr	1
		T pus	1	T pus	1	O exo	1	T nit	1
		T hva	1	T lat	1	Q sch	1		
		S pro	1	X lon	1				
		T chr	1						
		X lin	1						

Holycross s.b.(repl.)		Kinsale s.b.(repl.)		Killeagh m.sil.(repl.)		Glandore <u>Festuca</u> h.m.(repl.)	
A fun	7	T hyp	36	P lam	12	S dim	15
T hyp	6	A gre	16	A fun	11	T sig	10
A gre	5	P cog	14	T hyp	10	A rug	5
P lam	5	A fun	6	A gre	6	A fun	4
P var	4	A rug	4	P var	4	S oss	3
T sig	4	X lon	4	P cog	3	Q tri	2
A tri	2	A sor	3	T sig	3	G cir	1
A rug	1	T nit	3	T obt	3	Q ful	1
G ang	1	X lin	3	P mar	2	Q sch	1
M por	1	A ana	2	T hva	2	R eri	1
M lep	1	T obt	2	A tet	1	S ful	1
O umb	1	P var	1	A rug	1		
P cog	1	P lam	1	A tri	1		
S jun	1	P lon	1				
T hva	1	S nan	1				
T obt	1	S pro	1				
T nit	1	T hva	1				
X lin	1	T chr	1				

D-VAC RESULTS

Ballineen w.wheat		Ballinspittle w.wheat		Ballynacorra w.wheat		Cahir w.wheat		Castletownroche w. oats	
A fun	26	A fun	23	A fun	172	A gre	11	A fun	2
S jun	6	A ami	4	A gre	27	T obt	6	S oss	2
A gre	4	T hyp	4	T pus	2	S cla	3	A gre	1
T obt	4	S pic	2	A tri	1	T hyp	2	S bru	1
T hyp	4	A tri	1	P ova	1	T chr	2		
S pic	2	O exc	1	T hyp	1	A fun	1		
T chr	2	S oss	1			O exc	1		
A gra	1	S sim	1			S bru	1		
S cla	1	S cla	1						
		T chr	1						

Carrigaline w.wheat(1)		Carrigaline w.wheat(2)		Churchtown w.wheat(1)		Churchtown w.wheat(2)		Curraglass w.wheat	
A gre	22	A gre	19	A fun	13	A gre	102	A fun	89
A fun	20	A fun	4	A gre	5	A fun	70	A gre	56
T obt	5	T hyp	3	O exc	5	T hyp	13	A rug	2
S pro	3	T obt	2	A scu	3	A tri	8	M por	2
T hyp	3	A ami	1	T hyp	3	T nit	6	T pus	2
A lat	1	S oss	1	S pic	2	T obt	4	A tri	1
A ana	1	S pro	1	A ate	1	T chr	2	A elo	1
O laq	1	T chr	1	A ami	1	A ana	1	O exo	1
Q b/a	1	T pus	1	A gra	1	S bru	1		
Q sch	1			O inf	1	S sim	1		
S cla	1			S nan	1				
				S bru	1				
				S cla	1				
				T pus	1				
				T obt	1				
				T nit	1				

Kanturk w.wheat		Kinsale w.wheat		Ovens w.wheat(1)		Ovens w.wheat(2)		Riverstick w.wheat(1)	
A fun	46	A gre	23	S sim	39	A fun	35	A fun	65
T chr	12	A fun	3	A fun	6	A gre	5	S cla	12
S pic	7	T obt	2	T chr	5	S pic	4	A gre	6
T obt	7	A ami	1	T obt	4	T hyp	3	S oss	4
A gre	4	S oss	1	S cla	2	O exo	2	O inf	3
S oss	3	S sim	1	T hyp	1	Q tri	1	S pro	1
T hyp	2	T hyp	1	T nit	1	S cla	1	S nig	1
S nan	1					T obt	1	S nan	1
S bru	1					T pus	1	T pus	1
T hyp	1								

Riverstick w.wheat(2)		Riverstick w.wheat(3)		Shanagarry w.wheat		Tallow w.wheat		Ballymartle s.barley	
A gre	8	A fun	107	A fun	23	A gre	7	A fun	10
A fun	3	S cla	11	A gre	17	A fun	4	A gre	9
S pro	3	S oss	4	A tri	2	A lat	1	T obt	5
T obt	3	A tet	1	O exo	2	A ana	1	T hyp	4
S nig	1	A gre	1	A ami	1	S jun	1	T nit	4
		S nig	1	A tet	1	T hyp	1	T chr	2
		S pic	1	S cla	1	T chr	1	M dep	1
		S jun	1	S pic	1	T obt	1	O exo	1
		S bru	1	S oss	1			P sor	1
		T hyp	1	T hyp	1			S nig	1
				T chr	1			S pro	1
				T nit	1			S cla	1
								S sim	1
								S oss	1

Cahir s.wheat		Castlemartyr s.barley		Fota s.barley		Glandore s.oats		Kinsale s.barley	
T hyp	27	A gre	11	A fun	127	T obt	3	A gre	30
A fun	15	T hyp	10	A gre	40	S pic	2	A fun	28
A gre	10	A fun	6	A obt	21	A rug	1	A ana	8
S oss	6	T obt	2	T hyp	15	A gre	1	S nan	4
A ana	3	T nit	2	S cla	7	M dep	1	A sor	3
T obt	3	A ana	1	A rug	6	P sor	1	T hyp	3
S pro	2	M dep	1	T chr	5	S nig	1	T obt	2
S cla	2	S oss	1	A lat	2	S cla	1	A rug	1
S bru	1	S sim	1	A dec	2	T nit	1	Q sch	1
T chr	1	T hyp	1	A sor	2			S pro	1
T nit	1			A ana	2			T chr	1
				S pic	2			T nit	1
				A ami	1				
				A elo	1				
				L lon	1				
				S nan	1				
				T sig	1				

Muckross s.oats		Rathcormack s.oats		Riverstick s.barley(1)		Riverstick s.barley(2)		Carrigaline silage	
T obt	19	T obt	19	A fun	10	A gre	50	A fun	15
A gre	14	A gre	6	A gre	3	T obt	14	T hyp	6
S cla	11	S bru	5	T obt	3	A fun	12	S oss	2
S oss	6	A elo	4	S oss	1	T hyp	5	T chr	2
S jun	4	S tar	4	T hyp	1	S sim	3	A sor	1
P cog	2	S pic	4			A rug	1	A ana	1
S sim	2	T hyp	4			M dep	1	A gre	1
S bru	2	A fun	3			S nig	1	T pus	1
T chr	2	S sim	2			S pro	1		
A fun	1	S cla	2			S pic	1		
S nan	1	T chr	2			S ful	1		
S tar	1	Q sch	1			S oss	1		
S cic	1	T sol	1			T nit	1		
T nit	1								
T hyp	1								

Castlemartyr silage		Dunmanway man.silage		Fota silage		Fota man.silage		Killeagh man.silage	
A fun	14	A gre	1	A fun	103	A fun	21	A fun	67
S cla	2	S nan	1	S cla	14	T obt	9	T hyp	22
S bru	2	T hyp	1	A gre	6	A gre	6	T obt	14
T hyp	2			T hyp	6	T chr	4	A tet	3
T chr	2			T pus	6	T hyp	4	T chr	3
A atr	1			Q tri	2	T pus	3	T nit	3
O bra	1			Q sch	2	A ana	2	A gre	1
T pus	1			S oss	2	A ami	1	A hyp	1
T nit	1			T chr	2	A rav	1	S nan	1
				A rug	1	A sor	1	S imp	1
				A tet	1	A rug	1	S pic	1
				A ana	1	A tet	1	T dis	1
				O umb	1	S oss	1		
				P var	1	T hva	1		
				S bru	1				
				S nan	1				
				T obt	1				

Ardfield old pasture		Courtmac. old pasture		Dunmanway h.meadow(1)		Glandore Festuca h.m.		Glandore Holcus h.m.	
S sim	19	S oss	32	S pic	32	S oss	69	S oss	68
S oss	18	A fun	12	A fun	8	S pic	22	S pic	20
S ful	14	S ful	8	T dis	3	S ful	20	S ful	18
A fun	10	S nig	5	P var	1	S bru	5	A fun	14
S nig	7	S cic	5	S oss	1	S nig	4	S bru	12
S pic	6	T hyp	5	S cla	1	A fun	2	S nig	9
A ana	3	S sim	4			S sim	2	S sim	6
S cla	3	S cla	3			S nan	2	S imp	3
T dis	2	S jun	3			T dis	2	T dis	3
E com	1	S bru	2			M ret	1	S nan	2
S cic	1	T chr	2			O umb	1	E com	1
S jun	1	T sol	2			T chr	1	O inf	1
S ole	1	A ana	1			T nit	1	S cla	1
T chr	1	S pro	1					T nit	1
		S pic	1					T mar	1
		S imp	1						
		T dis	1						

Glandore h.meadow(3)		Killarney h.meadow		Mount Uniacke h.meadow		Muckross h.meadow		Roscrea old pasture	
S pic	14	S pic	63	A fun	80	S pic	85	S bru	65
S sim	9	S bru	39	S pic	15	S oss	64	A fun	18
A fun	6	A fun	18	T hyp	7	S ful	53	S ful	13
S nig	1	S cla	18	S cla	5	S tar	37	S cla	12
S nan	1	S oss	10	A gre	4	A fun	8	S pic	12
S oss	1	R eri	3	S bru	4	R eri	8	T dis	12
T dis	1	S ful	3	T chr	3	S cla	6	S sim	10
T obt	1	T dis	3	A ana	2	S fla	5	S oss	7
T hyp	1	S nig	2	S oss	2	S nig	4	T pus	2
		S sim	2	T nit	2	S sim	3	A ana	1
		S nan	2	P var	1	A ana	2		
		A int	1			E com	2		
		S cic	1			S cic	2		
		T obt	1			T dis	2		
						A gre	1		
						S imp	1		

TABLE 4: Comparison with European check list (cereals).
Comparison of common species (>5% of total staphylinid numbers in any site, where n>50, n being total number of staphylinids in pitfall traps or D-Vac) in cereal crops in this study with those listed in the European literature (Good and Giller, 1988). Data from Tischler (1958) are excluded as this may apply to non-cereal crops,

and winter-active species (Heydemann 1956) are also excluded. Several species are listed in Good and Giller (1988) which are possible misidentifications; these are also omitted here. Species not recorded in Ireland are marked with an asterisk.

Listed in European check list but absent or rare in this study	Common in this study but not listed in European check list
Coprophilus striatulus (F.)	Omalium excavatum
Anotylus inustus (Gravenhorst)	Atheta triangulum
Anotylus sculpturatus	Atheta amicula
Stenus biguttatus (L.)*	
Lathrobium fulvipenne	Stenus clavicornis
Tachyporus solutus	Stenus picipes
Amischa cavifrons (Sharp)*	Stenus similis
Dinaraea angustula	Stenus ossium
Lioqluta paqana (Erichson)	

TABLE 5: Unlisted grassland species.
Species recorded as common (>5% of total staphylinid numbers in any site, where n>50, n being total number of staphylinids in pitfall traps or D-Vac) in grassland sites in this study but not listed in Good and Giller (1988).

Aleochara bipustulata	Stenus brunnipes
Aloconota gregaria	Stenus fulvicornis
Geostiba circellaris	Stenus ossium
Gyrohypnus angustatus	Stenus picipes
Quedius boops/aridulus	Stenus tarsalis
Sepedophilus nigripennis	Tachyporus dispar
Staphylinus dimidiaticornis	Tachyporus pusillus

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FURTHER RECORDS OF IRISH DIXIDAE (DIPTERA) INCLUDING DIXELLA ATTICA PANDAZIS, NEW TO IRELAND.

Patrick Ashe and J. P. O'Connor

Introduction

Ashe (1985) provided a checklist of the Irish Dixidae and recorded eleven of the fourteen known British species from Ireland. Since then, further material collected in various parts of the country has become available for identification. This material has considerably extended the known distribution of most species. In addition, one species new to Ireland, Dixella attica Pandazis, was discovered. It is a rare species in Great Britain, only recorded from sites near the coast or estuaries (Disney, 1975).

The Irish national grid reference (six or four figure reference) is given followed by the Universal Transverse Mercator (UTM) 50km grid reference in parentheses. Distribution maps (Fig. 1), based on the UTM grid, are included for the various species based on the new records and those in Ashe (1985).

List of collectors and abbreviations used for collectors' names:- P.Ashe=PA; R.E.Blackith=REB; R.M.Blackith=RMB; J.P.O'Connor=JPOC; J.P.O'Connor and M.A.O'Connor=JMOC.

Dixa dilatata Strobl
Westmeath: 6.v.1987, Ballynafid N4060 (PV.2), PA.
Wexford: 27.v.1987, Killoughrim Forest S9041 (PU.4), JPOC.
Wicklow: 22.viii.1988, Glen of the Downs O2611 (PU.3), JPOC.
Previously known from Fermanagh, Kerry and Laois.

Dixa nebulosa Meigen
Kerry: 30.viii.1987, Blue Pool, Killarney V9886 (MT.3), JPOC.
Louth: 4.vii.1983, Mansfieldtown Bridge, River Glyde O022953 (PV.3), PA.
Meath: 28.viii.1981, Ballinter Bridge, River Boyne N8962 (PV.4), PA.
There is one other record from the River Flesk, Co. Kerry.

Dixa nubilipennis Curtis
Cavan: 4.vii.1983. Cormey Bridge, near Kingscourt, River Glyde N805978 (PV.1), PA.
Dublin: 27.iii.1983, Bohernabreena O094223 (PU.3), PA.
Kerry: 30.viii.1987, Blue Pool, Killarney V9886 (MT.3), JPOC.
Laois: 23.iv.1984, The Derries, Ballybrittas N587051 (PU.1), PA.
Leitrim: 27.v.1986, woodland near Clooncoe Lake N110912 (NV.3), PA
Wexford: 4.iv.1988, Killoughrim S9041 (PU.4),JMOC; 28,iii.1989, Tintern Abbey S7810 (PT.1), JPOC.
A common and widespread species, being also reported from Cork, Galway, Kerry and Wicklow.

Dixa puberula Loew
Cork: 14.viii.1983, small stream about 5km E. of Castletown Berehaven V728467 (MT.2), PA.
Donegal: 11.viii.1984, Glenack Burn River, Glenveigh National Park C017288 (NB.4), PA.
Kerry: 15.viii.1983, Torc Waterfall, Killarney V967844 (MT.3), PA.
Leitrim: 31.vii.1983, Glencar Waterfall G764437 (NA.2), PA.
Wicklow: 17.iii.1988, The Devil's Glen T2399 (PU.3), JMOC.
A widespread species with previous records form Cork, Kerry, Sligo, Tipperary and Wicklow.

Dixa submaculata Edwards
Dublin: 27.iii.1983, Bohernabreena, O094223 (PU.3), PA.
Leitrim: 31.vii.1983, Glencar Waterfall G764437 (NA.2), PA.

Wexford: 4.iv.1988, Killoughrim S9041 (PU.4), JMOC.
Wicklow: 19.iii.1983, Knocksink Wood, Enniskerry O216182 (PU.3), PA.
Known from Cork, Dublin and Kerry.

Dixella aestivalis Meigen
Clare 21.v.1985, Lough Bunny R3696 (NU.1), JMOC.
Offaly: 14.x.1986, Charleville Wood N320225 (NV.4), PA.
Waterford: 19.vii.1987, Ballin Lake, near Kill S4403 (PT.1), JPOC.
Wexford: 28.v.1987, Kettlehole, near Glenbough T0929 (PU.4), JPOC.
One of the more commonly encountered species with records from Clare, Galway, Kildare, Monaghan, Offaly and Wicklow.

Dixella amphibia De Geer
Leitrim: 27.v.1986, woodland near Clooncoe Lake N110912 (NV.3), PA.
Offaly: 14.x.1986, Charleville Wood N320225 (NV.4), PA.
Waterford: 19.vii.1987, Ballin Lake, near Kill S4403 (PT.1), JPOC.
Westmeath: 5.v.1987, Ballynafid N4060 (PV.2), JPOC; 6.v.1987, Ballynafid N4060 (PV.2), PA.
Also reported from Cavan, Galway and Offaly.

Dixella attica Pandazis
Wexford: 5.vi.1988, small lake near causeway, Ballyteige S937069 (PT.3), PA.
This is the first record for Ireland. Disney (1975) remarks that the presence of this species may indicate a site of unusual ecological interest. The small lake in which it was found was of a brackish nature.

Dixella autumnalis Meigen
Clare: 21.v.1985, Lough Bunny R3696 (NU.1), JMOC.
Wexford: 3.vi.1987, 4.vi.1987, pond near Bridgetown S9810 (PT.3), JPOC; 5.vi.1988, small lake near causeway, Ballyteige

S937069 (PT.3), PA.
The only other counties from which it has been recorded are Galway and Kildare.

Dixella filicornis Edwards
No new material of this species has been found. The species is only known from a single locality in County Laois.

Dixella martini Peus
Cork: 22.iv.1989, Annahala Region, Gearagh W2969 (MT.4), PA.
Dublin: 13.iv.1986, Castleknock O0837 (PV.4), JPOC.
Leitrim: 27.v.1986, woodland near Clooncoe Lake N110912 (NV.3), PA.
Offaly: 18.xi.1988, Golden Grove Wood, north of Roscrea S115914 (NU.3), RMB.
Waterford: 19.vii.1987, Ballin Lake, near Kill S4403 (PT.1), JPOC.
Westmeath: 6.v.1987, Ballynafid N4060 (PV.2), PA.
Wexford: 6.vi.1986, Nethertown T1202 (PT.3), JMOC; 27.v.1987, Killoughrim Forest S9041 (PU.4), JPOC; 5.vi.1988, small lake near causeway, Ballyteige S937069 (PT.3), PA; 28.iii.1989, Tintern Abbey S7810 (PT.1), JPOC.
Wicklow: 22.viii.1988, Calary Lower O2311 (PU.3), JPOC.
The most common Irish species. Previously reported from Cork, Galway and Offaly.

Dixella serotina Meigen
Clare: 21.v.1985, Lough Bunny R3696 (NU.1), JMOC.
Offaly: 14.x.1986, Charleville Wood N320225 (NV.4), PA.
Wicklow: 5.i.1988, Killoughter T309992 (PU.3), REB.
One of the species that Disney (1975) states may indicate a site of unusual ecological interest. There are two other records from Dublin and Offaly.

Acknowledgements

The authors wish to thank Professor R.E.Blackith, Dr.R.M.Blackith and Mrs M.A.O'Connor for supplying specimens and Dr. M.C.D. Speight for the sheet of UTM maps.

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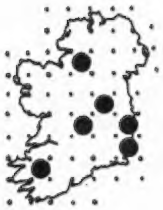
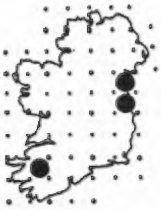
FIGURE 1. Maps showing the known distribution of Dixidae in Ireland.
Mapped on the UTM grid using the 50km sq. unit.


Dixa dilatata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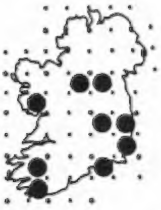
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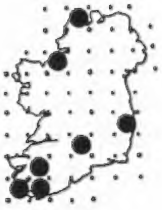
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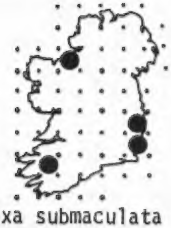
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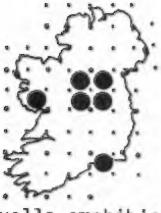
Dixella aestivalis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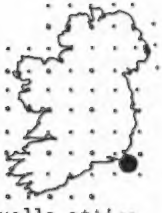
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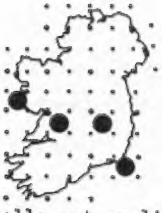
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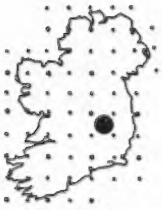
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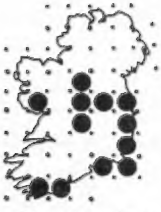
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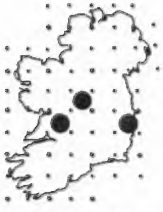
Dixella serotina

Bull. Ir. biogeog. Soc. No. 13 (1990)

ACARI OF THE FAMILIES MACROCHELIDAE AND VEIGAIIDAE (MEGOSTIGMATA) RECORDED FROM IRELAND.

T. Bolger

Introduction

Acari of the order Mesostigmata are among the most abundant and diverse groups of arthropods in many Irish habitats. For example, Curry (1969a) recorded a density of 28240 individuals per m^2 from a grassland in Co. Kildare. These included 59 species. A similarly high diversity (55 species) was recorded by Purvis (1982) in a single series of samples from Carnsore Point, Co. Wexford. Mesostigmata are also abundant in ephemeral habitats such as dung and compost and in rock crevices along the seashore.

No catalogue of Irish species exists for the Mesostigmata. This paper lists the species which have been recorded from two families, the Veigaiidae and the Macrochelidae. Both these groups are widely distributed. The Veigaiidae are one of the most abundant groups of microarthropod predators in the litter and soil layers of woodland. The Macrochelidae are also found in forest soils but they are particularly common in accumulations of rotting organic matter such as compost, dung and tidal debris.

The family definition of the Veigaiidae used follows that of Evans (1955, 1957) and Evans and Till (1979). Karg (1971) considers this grouping of three genera to be a subfamily within the family Eugamasidae. The family definition of the Macrochelidae follows that outlined by Krantz (1962), Evans and Till (1979) and Hyatt and Emberson (1988). This again differs from that of Karg (1971) who considers the group to be a tribe within a much more broadly defined Family Macrochelidae.

The records reported include all the published recordings, those for which material has been lodged in the Irish and British Museums of Natural History and a number collected by the author. They include one new Irish species and corrections and additional information about some of the previously published records. The reference list includes the sources of all the published records. An asterisk indicates that voucher material for that record is lodged in the National Museum of Ireland (Natural History), two asterisks indicate that the material is in the collection at the British Museum (Natural History). Grid references are included where they could be determined accurately. Only synonyms which have been used in the Irish records are included.

Abbreviations

Abbreviations used for collectors and identifiers are as follows:- AJMC=A.J.M.Claassens; BB=B.Brewster; BH=B.Healy; FAT=F.A.Turk; GOE=G.O.Evans; GP=G.Purvis; JPC=J.P.Curry; JNH=J.N.Halbert; JW=J.Whelan; KHH=K.H.Hyatt; MTK=M.T.Kelly; NUE=Nottingham University Expedition; PNL=P.N.Lawrence; RME=R.M.Emberson; RS=R.Southern; TB=T.Bolger; WBT=W.B.Thomas.

Veigaiidae

Cythydrolaelaps hirtus Berlese
Dublin (21): on limestone rocks and under stones between tide marks at Malahide and Howth (JNH).
West Cork (3): Lough Hyne (coll. RS, det. JNH).
West Galway (16): under stones resting on mud, Ardfry (JNH).
West Mayo (27): under stones partially embedded in sand above high-water mark, Mulranny (JNH)[4].

[4]Listed in manuscript appended to Halbert's personal copy of the 1915 paper.

Cythydrolaelaps incisus Evans
Cythydrolaelaps hirtus (Halbert 1915, in part)
Dublin (21): upper parts of the intertidal area, Malahide (JNH).

Gamasolaelaps excisus (C. L. Koch)
Gamasolaelaps aurantiacus Berlese
Clare (9): in moss on rocks, Ballyvaughan** (coll. PNL, det. KHH).
Dublin (21): above high-water mark, Howth* (JNH).
Kildare (19): associated with animal manure spread on grassland, Celbridge (N968275)(TB).
Meath (22): associated with animal manure spread on grassland, Grange (N890528)(TB).
West Mayo (27): on coast at Mulranny* and Westport (JNH).
Westmeath (23): rotten grass, Church Island, Lough Owel (N417578) (coll. PNL, det. KHH).

Veigaia agilis (Berlese)
Dublin (21): on Urtica, Glasnevin (O155385)(JPC).
Kildare (19): in grassland soil (JPC) and associated with animal manure spread on grassland (TB), Celbridge (N968275).
Offaly (18): permanent pasture on reclaimed cutaway bog, Lullymore (N6925)(JW).
Wexford (12): in a dune centre, a bracken bed and Salix ditch at Carnsore Point (T1201)(GP).
Based on Berlese's original descriptions and the type material, Farrier (1975) and Athias-Henriot (1961) considered V. agilis to be unidentifiable. Evans (1955) lists it as a `species' dubius. However, Hurlbutt (1983) and Till (1988) believe they are able to distinguish this species and the latter author has redescribed V. agilis, based on one specimen from England and one from Celbridge, and V. exigua, based on a specimen from the sand-dune at Carnsore Point.

Veigaia cervus (Kramer)
Cyrtolaelaps cervus (Kramer)
Kildare (19): in grassland soil, Celbridge (N968275)(JPC).
West Mayo (27): under bark on Achill*, under stones in the nest of Lasius niger at Mulranny and in moss at Knappagh Wood* and Lough Feenagh* (JNH).
Wexford (12): in a bracken bed at Carnsore Point (T1201)(GP); in soil from grassland and a Pinus radiata stand at J.F. Kennedy Memorial Park (S728191)(TB).
Wicklow (20): fungal fruiting body, Glenealy (T218940)(TB).

Veigaia exigua (Berlese)
Wexford (12): sand-dune, Carnsore Point (T1201)(GP).
See note under V. agilis.

Veigaia kocki (Trägardh)
Cyrtolaelaps kocki Trägardh
Kildare (19): in grassland soil, Celbridge (N968275)(JPC).
Offaly (18): Salix litter, Clonsast (N1819)(TB).
West Mayo (27): in moss on Clare Island* (JNH).
Wicklow (20): in fruiting body of Fomes fomentarius at Gleanealy (T218940) and Tiglin (T235918)(TB).

Veigaia nemorensis (C. L. Koch)
Cyrtolaelaps nemorensis (C. L. Koch)
Dublin (21): on Urtica, Glasnevin (O155385)(JPC).
Kildare (19): in grassland soil and in decaying vegetation, Celbridge (N968275)(JPC).
Meath (22): associated with animal manure spread on grassland, Grange (N890528)(TB).
Offaly (18): Salix litter, Clonsast (N1819)(TB).
West Mayo (27): in moss on Clare Island* and under the bark of fir trees on Achill (JNH).

Wexford (12): in an Iris bog, a bracken bed and a Salix ditch at Carnsore Point (T1201)(GP); in soil from grassland and stands of Pinus radiata, Cupressocyparis leylandii, Tsuga heterophylla, Chamaecyparis lawsonia, and Picea sitchensis, J. F. Kennedy Memorial Park (S728191)(TB).
Wicklow (20): in fruiting body of Fomes fomentarius at Glenealy (T218940) and Tiglin (T235918)(TB).

Veigaia planicola (Berlese)
Kildare (19): in grassland soil, Celbridge (N968275)(JPC).
Offaly (18): Salix litter, Clonsast (N1819)(TB).
Wexford (12): dune centre, pasture, bracken bed, gorse bank and Salix ditch at Carnsore Point* (T1201)(GP); in soil from stands of Pinus radiata, Cupressocyparis leylandii and Chamaecyparis lawsonia at J. F. Kennedy Memorial Park (S728191)(TB).
Wicklow (20): fungal fruiting body, Glenealy (T218940)(TB).

Veigaia transisalae Oudemanns
  Cyrtolaelaps transisalae Oudemanns
Clare (9): at the exit from the maze at the entrance to Pollnagollum Passage (M1604)(coll. WBT, det. FAT).
West Mayo (27): in moss at Croaghmore*, Clare Island and at Coolbareen Lough*; under bark on Achill; in moss at 600 ft on Croaghpatrick* and at Knappagh Wood (JNH).

Macrochelidae

Dissoloncha superbus (Hull)
  Macrocheles superbus Hull
Down (38): tidal debris, Portaferry* (J575521)(TB).
Wexford (12): tidal debris, Carnsore Point* (T1201)(coll. BH, det. GOE).

Geholaspis (Geholaspis) aeneus (Krauss)
Holostaspis longispinosus (Halbert 1915, in part)
West Mayo (27): in moss on Clare Island* (coll. JNH, det. KHH).

Geholaspis (Geholaspis) longispinosus (Kramer)
Holostaspis longispinosus (Kramer)
Clare (9): near a weir** and from soil in rock crack**, Lough Inchiquin (coll. PNL, det. RME and BB); in moss on bricks, Drumnoan** (coll. PNL, det. BB); in moss by stream** and in rotten beech stump**, at 800 ft, Slieve Elva (coll. PNL, det. BB); short grass and moss, Ballyport Lough** (coll. PNL, det. BB); in moss under wall, Mortyclogh** (coll. PNL, det. BB).
Leitrim (29): flood debris, Carigeencor** (coll. PNL, det. RME).
North Galway (17): in mossy turf** (M3025)(coll. PNL, det. RME).
Offaly (18): Salix litter, Clonsast (N1819)(TB).
West Mayo (27): in moss and under bark on Achill* and Clare Island (JNH).
Westmeath (23): in turf, in pavement** (coll. PNL, det. RME)
Wexford (12): in a gorse bank, Carnsore Point (T1201)(GP).
Wicklow (20): in fruiting body of Fomes fomentarius at Glenealy (T218940) and Tiglin (T235918)(TB).

Geholaspis (Longicheles) mandibularis (Berlese)
Holostaspis longulus (Halbert 1915)
Clare (9): shallow creek, Black Head** (coll. PNL, det. BB); in soil between rocks, Abbey Hill** (coll. PNL, det. BB); in moss by stream at c. 800 ft., Slieve Elva** (coll. PNL, det. BB); humus at base of sycamore, Newtown Castle** (coll. PNL, det. BB); in moss on ground, Bushy Island and near weir, Lough Inchiquin** (coll. PNL, det. BB); under stones in ruin, Drumnoan** (coll. PNL, det. KHH).
Dublin (21): the seashore, Howth (coll. JNH, det. KHH).
Leitrim (29): flood debris, Carigeencor** (coll. PNL, det. RME); mossy turf at 800 ft., (G815380)** (coll. PNL, det. RME).

North Galway (17): mossy turf near Galway** (M3025) (coll. PNL, det. RME).
Offaly (18): Salix litter, Clonsast (N1819)(TB).
Sligo (28): near Lough Carran** (coll. PNL, det. RME).
West Galway (16): spruce litter and moss, Upper Lough Corrib** (coll. PNL, det. RME).
West Mayo (27): in moss on Clare Island*, in rotten wood at Mulranny*, under stones by a lake shore at Castlebar* (JNH, det. KHH).
Westmeath (23): rotten grass, Church Island, Lough Owel (N417578)** (coll. PNL, det. RME); in turf in pavement** (coll. PNL, det. BB); roadside ditch containing oak and beech litter, Ballynafid** (coll. PNL, det. RME).
Wexford (12): in a pasture and bracken bed* at Carnsore Point (T1201)(GP).
Wicklow (20): in fruiting body of Fomes fomentarius at Glenealy (T218940) and Tiglin (T235918)(TB).

Glyptholaspis americana (Berlese)
Macrocheles vagabundus (Berlese)
Clare (9): in straw, Aghaglinny North** (coll. PNL, det. KHH).
Dublin (21): under moist pieces of wood on the sea-bank, Malahide (JNH).

Holostaspella ornata (Berlese)
Clare (9): in straw, Aghaglinny North** (coll. PNL, det. KHH).

Holostaspella subornata Bregetova and Koroleva
Clare (9): grass roots, Lough Inchiquin** (coll. PNL, det. KHH).

Macrocheles carinatus (C. L. Koch)
Clare (9): liverworts, Drumnoan** (coll. PNL, det. BB); moss and liverworts on rocks, Lough Inchiquin** (coll. PNL, det. BB); in mosses and grasses on fen, 3 miles NE of Corofin** (coll. PNL,

det. BB); rotten wood, Poll Elva** (coll. PNL, det. BB).
Kildare (19): in grassland and winter wheat field, Celbridge (N968275)(JPC and MTK).
Leitrim (29): flood debris, Carigeencor** (coll. PNL, det. RME).
Meath (22): associated with animal manures spread on grasland, Grange (N890528)(TB and JPC).
Westmeath (23): rotten grass, Church Island, Lough Owel (N417578)** (coll. PNL, det. RME).
Wexford (12): associated with animal manures, Johnstown Castle (T015162) and Kilmore (S971066)(TB).

Macrocheles decoloratus (C. L. Koch)
West Cork (3): sand martin's nest, Dunmanway** (coll. AJMC, det. RME).

Macrocheles dentatus (Evans)
Clare (9): moss** and liverwort on rock wall and soil under bramble**, Lough Inchiquin (coll. PNL, det. BB); ferns in deep crack, near Ballyvaughan (coll. PNL, det. BB); humus in pot hole, Poll Elva** (coll. PNL, det. BB).
North Galway (17): in mossy turf** (M3025) (coll. PNL, det. RME).
Westmeath (23): rotten grass, Church Island, Lough Owel (N417578)** (coll. PNL, det. RME).
Wexford (12): in a Salix ditch, Carnsore Point* (T1201)(GP).

Macrocheles glaber (Muller)
Macrocheles marginatus (Herm.) var. littoralis Halbert
Clare (9): seaweed, Bell Harbour** (coll. NUE, det. KHH); compost heap and hazel humus under ivy, SW Lough Inchiquin** (coll. PNL, det. BB); rotting hay pile, Ballvaughan** (coll. PNL, det BB).
Dublin (21): under stones and refuse on seashore, Malahide (JNH); on Ranunculus and Lolium plants at Glasnevin (O155385)(JPC).
East Cork (5): on Geotrupes stercorarius (L.) in a meadow near Cork** (coll. AJMC, det KHH).

Kildare (19):? in grassland soil, Celbridge (N968275)(JPC); associated with animal manure spread on grassland, Celbridge (N968275) (TB and JPC); in soil from winter wheat field, Celbridge (N968275) (MTK and JPC).
Meath (22): associated with animal manure spread on grassland, Grange (N890528) (TB and JPC).
West Galway (16): under stones on mud at seashore, Ardfry* (coll. JNH, det. KHH).
West Mayo (27): seashore at Westport* (coll. JNH, det. KHH).
Wexford (12): associated with animal manure spread on grassland, Kilmore (S971066)(TB).

Macrocheles montanus (Willmann)
Westmeath (23): roadside ditch containing oak and beech litter, near Ballnafid ** (coll. PNL, det. RME).

Macrocheles muscadomesticae (Scopoli)
Dublin (21): garden compost heap, Stillorgan* (O198217)(TB); in mixture of bedding and faeces from dog houses, Belfield (O183303)(TB).

Macrocheles opacus (C. L. Koch)
Macrholaspis opacus (C. L. Koch)
Holostapsis terreus (Halbert 1915, in part)
Clare (9): in moss on a wall and a rotten stump, Lough Inchiquin** (coll. PNL, det. BB).
Kildare (19): in grassland soil, Celbridge (N968275)(JPC).
North Galway (16): mossy turf, Galway (M3025)** (coll. PNL, det. RME).
West Mayo: (27): in fungi on Achill Island* and in moss at Knappagh Wood* (coll. JNH, det. KHH).
Westmeath (23): in roadside ditch containing beech and oak litter, near Ballynafid (N4161)** and in turf in pavement** (coll. PNL, det. RME).

Wexford (12): in a dune centre, a bracken bed* and a gorse bank at Carnsore Point (T1201)(GP); in soil from grassland and a Cupressocyparis leylandii stand at J. F. Kennedy Memorial Park (S728191)(TB).
Wicklow (20): in fruiting body of Fomes fomentarius at Glenealy (T218940) and Tiglin (T235918)(TB).

Macrocheles pennicilliger (Berlese)
Clare (9): Burren (coll. PNL, det. BB).
Dublin (21): on Rumex and Dactylis, Glasnevin (O155385)(JPC).
Kildare (19): associated with animal manure spread on grassland, Celbridge (N968275)(TB).
Meath (22): associated with animal manure spread on grassland, Grange (N890528)(TB).
Wexford (12): associated with animal manure spread on grassland, Kilmore (S971066) and Johnstown Castle (T015162)(TB).

Macrocheles scutatus (Berlese)
Dublin (21): in soil and on vegetation on the saltmarsh*, Bull Island (O2338) (coll. BH, det. GOE)

Macrocheles subbadius (Berlese)
Clare (9): compost heap, SW Lough Inchiquin** (coll. PNL, det. BB).

Macrocheles submotus Falconer
Holostapsis tridentatus (Halbert 1915, in part)
Clare (9): humus at base of sycamore, Newtown Castle** (coll. PNL, det. BB); compost heap**, humus**, moss on fallen tree** and moss and liverwort on rocks**, Lough Inchiquin (coll. PNL, det. BB); moss on large rock** and on stump**, Newtown Castle (coll. PNL, det. BB); fern humus, Polnagollum** (coll. PNL, det. BB); moss of sycamore** and sycamore humus**, Newtown Castle (coll. PNL, det. BB); moss and humus in hazel scrub wood, 5 ml. NW of Corofin**

(coll. PNL, det. BB).
Kildare (19): in decaying vegetation, Celbridge (N968275) (JPC).
Leitrim (29): flood debris, Carigeencor** (coll. PNL, det. RME).
Meath (22): associated with animal manure on grassland, Grange (N890528)(JPC).
North Galway (17): in mossy turf, Galway (M3025)** (coll. PNL, det. RME).
Sligo (28): (G6837) (coll. PNL, det. RME).
South Kerry (1): in oak litter, Killarney (V916808)(TB).
West Mayo (27): in moss and under bark at Clare Island*, Achill Island*, Croaghpatrick* and Knappagh Wood (coll. JNH, det. KHH).
Westmeath (23): in pavement** (coll. PNL, det. RME); rotten grass, Church Island, Lough Owel (N417578)** (coll. PNL, det. RME); roadside ditch containing oak and beech litter, near Ballynafid (N4161) (coll. PNL, det. RME).
Wexford (12): in a bracken bed, Carnsore Point (T1201)(GP).
Wicklow (20): in fruiting body of Fomes fomentarius at Glenealy (T218940) and Tiglin (T235918)(TB).

Macrocheles tardus (C. L. Koch)
Leitrim (29): flood debris, Carigeencor** (coll. PNL, det. RME).
Westmeath (23): rotten grass, Church Island, Lough Owel, (N417578)** (coll. PNL, det. RME); roadside ditch containing oak and beech litter, near Ballynafid (N4161) (coll. PNL, det. RME).

Macrocheles terreus (Canestrini and Fanzago)
West Mayo (27): Knappagh Wood*, Westport(JNH).

Discussion

No previous attempt has been made to catalogue the Irish Veigaiidae or Macrochelidae but the British fauna has been listed

by Hull (1918, 1925), Turk (1953), Evans (1955, 1959), Evans and Browning (1956), Till (1988) and Hyatt and Emberson (1988). These authors list and provide keys to 11 British species of Veigaiidae and 35 Macrochelidae. Ten of the Veigaiidae have also been recorded in Ireland. Veigaia bouvieri (Berlese), which has not been recovered here, appears to have been recorded only once in Britain. The first Irish record of Macrocheles muscadomesticae is included in this paper meaning that twenty species of Macrochelidae have now been recorded from Ireland. Of the remaining fifteen species which have been recorded from Britain, two, Geholaspis longulus (Berlese) and Macrocheles pisentii (Berlese), are thought to be doubtful records, and a further five have been recorded from only one or two localities. However, many of the remaining eight species are widely distributed in Britain and Europe and probably do occur here in habitats which have not been adequately sampled, e.g. poultry manure, nests of small mammals, birds and ants, debris along the shores of freshwater bodies and the phoretic animals on insects.

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A PROVISIONAL LIST OF THE HARPACTICOIDA (CRUSTACEA: COPEPODA) OF IRELAND.

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The Harpacticoida constitutes an Order of the Subclass Copepoda. The animals are primarily aquatic and predominantly benthic, and may be found in marine, brackish, and freshwater habitats, and even semi-terrestrial environments such as damp moss and leaf-litter. A combination of small size (0.3-3.0mm in length), an abundance of species, and vast numbers of individuals has led to the group being somewhat neglected. However, in recent years there has been an increasing interest in harpacticoids, reflected in an enormous increase in the literature.

This paper is an attempt to gather together a comprehensive annotated check-list of the harpacticoid copepods of Ireland. It is based primarily on a re-assesment of the published records in the scientific literature, augmented by some new data. The harpacticoids as a group have been much neglected in Ireland. The last complete check-list was by Pearson (1905), who listed 64 species, and a new list is now appropriate. There have been several major studies done since Pearson, and a significant number of species added to the fauna. Sadly, the Clare Island Survey material of G.P.Farran cannot be found and is presumed to have been destroyed. However, the authors have had access to the excellent reference collections of K.M.Roe and C.E.O'Riordan, all on slides, in the National Museum of Ireland. This has allowed many of the records to be re-assessed in the light of recent taxonomic changes.

The history of the study of harpacticoids around Ireland can conveniently be subdivided into a number of clear-cut phases

or eras, depending on the principal collectors and the literature which they would have used to identify their material.

1. The "Brady" era. This covers a thirty year period from 1873 to 1903 and deals with collections made off the west coast of Ireland, principally by Prof. G.S.Brady, and also by a small band of his friends and colleagues, who worked either directly with him or would have used volume two of his Ray Society Monograph (Brady, 1880) for their identifications and nomenclature. Consequently, the identity of the records from this era can be interpreted with reference to the descriptions and illustrations given in the Monograph. This approach was adopted by Lang (1948), who summarised all records up to about 1940. Some of the Brady species are unrecognisable or based on more than one species, but, in general, the present interpretation coincides with Lang (1948). Principal papers during this phase were; Brady (1880, 1902), Brady and Robertson (1873), Herdman (1891), I.C.Thompson (1896, 1897, 1900), and Farran (1903).

2. The "Sars" era. This covers the period 1903-1948, when the principal work used was the monumental "Crustacea of Norway" by G.O.Sars. The harpacticoid section was published in parts over the period 1903-1911, with a supplement in 1921. This work represented a great advance over that of Brady, with better illustrations, clearer descriptions, and a significant increase in the number of recognised species. The principal papers include the Clare Island Survey report by Farran (1913) and the Ray Society monograph on "British fresh-water copepods" (Gurney, 1932) which is still the standard work. There was also a list of the fauna of Strangford Lough (Williams, 1954), evidently based on Sars although published after 1948.

3. The "Lang" era (1948-1965). The comprehensive "Monographie der Harpacticiden" (Lang, 1948) represented a considerable synthesis, dealing as it did with the harpacticoids of the world and it is still an essential reference work. However it is not generally available in Ireland and could be initially off-putting for those not familiar with German. Principal works of this phase were the important papers by Roe (1955, 1958, 1960) and O'Riordan (1966, 1971a, 1971b).

4. Lang (1965), due to the quality of his descriptions and illustrations, established a standard for the "modern" era. In addition, he set the taxonomy in a world-wide context. The era is characterised by a huge increase in the literature. Important papers include the tabular keys by Wells (1976), with its various supplements, and the catalogues and bibliographies of Vervoort (1986-88), Bodin (1988) and Stock (1989).

The arrangement of the species list is as follows: the sequence of families follows Lang (1948) and Bodin (1988). The genera and species are listed in alphabetical order within families. Where necessary, some genera are individually discussed. Synonyms which appear in the Irish literature are given under the relevant modern names. Where a species has been recorded in the literature under a name which is not a synonym, i.e., misidentified, the original name is included for reference purposes. Material lodged in the National Museum of Ireland is indicated NMI. For each species, the records are listed county by county in alphabetical order. For each county, the records are listed in order of date with the published records and then the new unpublished data. For the published material, only the original record is cited, as some papers repeat previous data. For example, Herdman's (1891) records were repeated by I.C.Thompson (1896), summarised by

Pearson (1905), then by Lang (1948), and yet again by O'Riordan (1971b). Grid references are given for the unpublished but not for the published records.

Ecological data are kept to a minimum, being derived from three sources viz. (Sars, 1903-1911), the cited papers for each species, and personal observations. For each species, data are given, inter alia, on whether it is (a) marine, brackish or freshwater, (b) planktonic, found amongst algae, or associated with a particular substratum, and (c) attracted to a light-trap (Holmes and O'Connor, 1988). Where relevant a brief discussion on taxonomic problems or other matters follows.

The present check-list contains 278 species in 25 families. All records of Irish harpacticoid species, both marine and freshwater,are cited, except for some of the earliest records (e.g., in Brady and Robertson, 1873), which are now unrecognisable. In addition, there are 257 new records, including 17 species new to Ireland. The latter are indicated by *.

Studies on the Irish fauna are far from complete. Almost half (48.2%) of the species have only one or two records. A comparison of one sub-group is revealing. Of the 109 marine interstitial species listed by Wells (1986) from the European Atlantic seaboard (category II/2), only 18 (or 16.5%) appear on the present check-list. It is hoped therefore that this provisional list will provide a basis for future research.

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Provisional list of Irish Harpacticoida

Family LONGIPEDIIDAE

The family consists of the single genus Longipedia Claus, which was comprehensively revised by Wells (1980). Four species occur in the seas around Ireland. Another two are not accepted here: L. rosea G.O.Sars, recorded by O'Riordan (1966, 1971b), but demonstrated by Wells to be based on juvenile stages and ranked as a nomen dubium; and L. weberi A.Scott, confined to warm waters from the Suez Canal to Japan (Wells, 1980). Some specimens named as L. weberi by Roe and O'Riordan (NMI) were determined as L. helgolandica by Wells (1980). Various species of Longipedia were recorded by earlier workers but, due to the uncertainty about the correct identity of the material, only those records verified by Wells (1980) are included here. More recent records are also included.

Longipedia coronata Claus
Dublin: Dalkey (O'Riordan, 1966, as L. weberi (NMI)); Dublin Bay, O283274, 12.5m, sand, 16.ii.1982, J.G.Wilson (NMI).
Marine, sublittoral.

Longipedia helgolandica Klie
Dublin: Dalkey (Roe, 1958, as L. coronata and L. minor; O'Riordan, 1966, as L. coronata and weberi (NMI)); Dunlaoghaire (O'Riordan, 1971b, as L.weberi (NMI)); off Howth, O3137, 3.v.1978, M.Parker (NMI).
Marine, sublittoral.

Longipedia minor T.Scott and A.Scott
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1983).
Dublin: Dalkey (Roe, 1958)
Galway: Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).

Mayo: Westport Bay (Wells, 1980).
Marine, light-trap.

Longipedia scotti G.O.Sars
Cork: L.Hyne (Holmes, 1983); Sherkin I., W008259, light-trap, 7m, rock, 2.viii.1987, J.M.C.H.
Dublin: Dalkey (O'Riordan, 1966); Seapoint and Dunlaoghaire (O'Riordan, 1971b); Dublin Bay, O283274, 12.5m, sand, 15.vi.1982, J.G.Wilson (NMI); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.; Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix,1984, J.M.C.H.
Galway: Galway Bay (Wells, 1980).
Marine, light-trap.

Family CANUELLIDAE

Canuella perplexa T.Scott and A.Scott
Antrim: Ballygalley Bay (Pearson, 1905).
Dublin: Dalkey (O'Riordan, 1966, 1971b); Baldoyle, Dublin Bay area, and Shanganagh (O'Riordan, 1971b, also as C. furcigera Sars (NMI)); Portmarnock Strand, O248433, mid-shore sand, 10.ix.1988, J.M.C.H. (NMI).
Galway: Grattan Road Strand, Silver Strand, and Carna (Bodin and Jackson, 1989).
Louth: Termonfeckin (O'Riordan, 1971b).
Louth/Meath: Drogheda area (O'Riordan, 1971b).
Mayo: Blacksod Bay, and Inishgowla, Clew Bay (Farran, 1913).
Marine, sand and muddy sand.

Sunaristes paguri Hesse
Cork: Dunmanus Bay, V9240, from shell with Pagurus bernhardus (L.), 13.viii.1979, J.M.C.H. (NMI).
Kerry: Tralee Bay, from shell with P. bernhardus, x.1981, D.Minchin (NMI).

Mayo: Blacksod Bay (Farran, 1913).
Marine. In shells occupied by hermit crabs (Leigh-Sharpe, 1935).

Family AEGISTHIDAE

Marine planktonic forms with a world-wide distribution. Boxshall (1979) listed three species from the north east Atlantic. Two of these occur in Irish waters (Farran, 1905).

Aegisthus mucronatus Giesbrecht
(= Aegisthus atlanticus Wolfenden)
Off W. of Ireland (Farran, 1905, 1908; Pearson, 1906).
Marine, planktonic.

Aegisthus spinulosus Farran
Off W. of Ireland (Farran, 1905).
Marine, planktonic. First described (Farran, 1905) from a specimen taken at Helga Station CXX, 53° 58′ N. 12° 28′ W. Its status is discussed by Boxshall (1979).

Family ECTINOSOMATIDAE

Arenosetella tenuissima (Klie)
(= Hastigerella palpilabra Nicholls)
Dublin: Dublin Bay area (O'Riordan, 1971b); Skerries, O259608, mid-shore sand, 29.xii.1987, J.M.C.H. (NMI); Portmarnock, O248433, mid-shore sand, 10.ix.1988, J.M.C.H. (NMI); N.Bull Wall, O212360, 2.i.1989, J.M.C.H.
Marine, interstitial.

Bradya typica Boeck
Donegal: Gola I. (Herdman, 1891).
Marine, sublittoral mud. Widely distributed in Arctic waters.

Records from Templenoe and Berehaven (Lang, 1948) were based on a misreading of a data table (I.C.Thompson, 1896) and can be ignored. The record from Gola I. (Herdman, 1891) was regarded as doubtful by Lang (1948).

Ectinosoma melaniceps Boeck
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985).
Down: Newcastle and Dundrum (Brady, 1902).
Dublin: Dalkey (Roe, 1958); Dalkey I., O279261, 20.ix.1986, J.M.C.H. (NMI); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Galway: Ballynakill (Farran, 1913); Kilkieran Bay, Pseudocucumas ground, 9.i.1979, D.McGrath.
Mayo: off Clare I., Inishlyre Roads, Clew Bay, and Blacksod Bay (Farran, 1913).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, amongst weed and sand. Light-trap. Roe (1958) described the variety tuberculata from the Dalkey area but Lang (1965) showed this to be invalid. The "tubercle" on leg 5 is present in all specimens and had been omitted by Boeck in his description. It is probably that a tubercle or pore occurs in all species of Ectinosoma. The record of Canthocarpus minuticornis Müller from Strangford Lough by W.Thompson (1856) is unrecognisable despite Lang (1948) listing it in the synonymy of E. melaniceps.

Ectinosoma normani T.Scott and A.Scott
Down: Dundrum (Brady, 1902).
Dublin: Dalkey (Roe, 1958, fig.140, as Ectinosoma sp.; Lang, 1965).
Marine, mud. Lang (1965, p.16) stated that the "Ectinosoma sp." by Roe (1958) was, no doubt, identical with E. normani. Apparently, Lang did not examine Roe's specimens.

Ectinosoma tenuipes T.Scott and A.Scott
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine.

Halectinosoma curticorne (Boeck)
(= Ectinosoma curticorne Boeck)
Cork: Ballydehob, and Ballylickey Bridge, near Bantry (O'Riordan, 1971b).
Dublin: Malahide, Baldoyle, Merrion Strand, and Dalkey (O'Riordan, 1971b); N.Bull Wall, O212360, sand, 2.i.1989, J.M.C.H. (NMI).
Galway: Ballynakill Harbour (Farran, 1913).
Meath: Mornington (O'Riordan, 1971b).
Marine, mud.

Halectinosoma elongatum (G.O.Sars)
(= Ectinosoma elongatum G.O.Sars)
Down: Strangford L. (Wells, 1963).
Marine.

Halectinosoma erythrops (Brady and Robertson)
(= Ectinosoma erythrops Brady and Robertson)
(= Pararenosetella erythrops (Brady and Robertson))
Donegal: Killybegs (Herdman, 1891).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine.

Halectinosoma gothiceps (Giesbrecht)
(= Ectinosoma gothiceps Giesbrecht)
Cork: N.shore, L.Hyne, W093288, gravel under stones, 8.vii.1982, J.M.C.H.
Down: Ardglass (Williams, 1954).
Dublin: Dalkey (Roe, 1958); Dunlaoghaire (O'Riordan, 1971b).
Mayo: off Clare I. (Farran, 1913).

Marine.

Halectinosoma gracile (T.Scott and A.Scott)
(= Ectinosoma gracile T.Scott and A.Scott)
Down: Killard and Kilclief (Williams, 1954).
Marine, coarse sand.

Halectinosoma herdmani (T.Scott and A.Scott)
Dublin: Dublin Bay area (O'Riordan, 1971b, also as H. erythrops).
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Marine, muddy sand and amongst algae.

Halectinosoma propinquum (T.Scott and A.Scott)
(= Ectinosoma propinquum T.Scott and A.Scott)
Antrim: Ballygalley Bay (Pearson, 1905).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine.

Halectinosoma sarsi (Boeck)
(= Ectinosoma sarsi Boeck)
(= Ectinosoma spinipes Brady)
Clare: Aranmore (Brady, 1880).
Donegal: L.Swilly (Brady, 1880); Gola I. and Killybegs (Herdman, 1891).
Dublin: Seapoint and Dunlaoghaire (O'Riordan, 1971b).
Kerry: Templenoe, Kenmare Bay (Herdman, 1891); Valentia (I.C.Thompson, 1896).
Marine.

Hastigerella sp.
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).

Marine, interstitial.

Microsetella norvegica (Boeck)
(= Microsetella atlantica Brady and Robertson)
(= Ectinosoma atlanticum (Brady and Robertson))
Cork: Kinsale Harbour (Brady, 1880); Glengarriff, Bantry Bay (Herdman, 1891); Fastnet (Gough, 1906); off S.W. of Ireland (Farran, 1920); L.Hyne (Holmes, 1985).
Donegal: Gola I. (Herdman, 1891).
Down: Strangford L. (Boyd, 1973b).
Galway/Mayo: off W. of Ireland (Brady and Robertson, 1873; Farran, 1905).
Kerry: off S.W. Ireland (Brady and Robertson, 1873); Templenoe, Kenmare Bay (Herdman, 1891); Valentia (I.C.Thompson, 1896, 1897); off Inishtearaght (Farran, 1920).
Mayo: off Co.Mayo (Boxshall, 1979).
Wexford: Coningbeg Lightship (Gough, 1906).
Marine, planktonic, widely distributed in the Atlantic (Boxshall, 1979). Light-trap.

Microsetella rosea (Dana)
Kerry: 40 miles off Inishtearaght (Farran, 1920).
Mayo: off Co.Mayo (Farran, 1908); off Co.Mayo, 85 fathoms, 8.xi.1988, D.Minchin (NMI).
Marine, planktonic, widely distributed in the Atlantic (Boxshall, 1979).

Pseudobradya fusca (T.Scott and A.Scott)
Cork: L.Hyne (Holmes, 1985).
Marine, light-trap.

Pseudobradya hirsuta (T.Scott and A.Scott)
Dublin: Seapoint (O'Riordan, 1971b).
Marine.

Pseudobradya minor (T.Scott and A.Scott)
Cork: L.Hyne (Roe, 1960).
Dublin: Seapoint, and Shanganagh (O'Riordan, 1971b);
N.Bull, 02-3-, 9.iv.1956, F.O'Gorman (NMI).
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, muddy sand.

Pseudobradya similis (T.Scott and A.Scott)
Cork: L.Hyne (Holmes, 1985).
Marine, muddy sand. Light-trap.

Family DARCYTHOMPSONIIDAE

Darcythompsonia fairliensis (T.Scott)
(= D'Arcythompsonia fairliensis (T.Scott))
Cork: L.Hyne, W097280, algae, 15.viii.1988, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958).
Marine, amongst algae.

Leptocaris ignavus (Noodt)
Dublin: Dalkey (Roe, 1958).
Roe's voucher specimens (NMI) are in poor condition and fresh material is desirable to confirm the record.

Family TACHIDIIDAE

Danielssenia typica Boeck
(= Jonesiella spinulosa (Brady and Robertson))
Mayo: Westport Bay (Brady, 1880).
Marine, sublittoral mud.

Euterpina acutifrons (Dana)
(= Euterpe gracilis Claus)
(= Euterpe acutifrons (Dana)
Cork: Kinsale Harbour (Brady and Robertson, 1873); Fastnet (Gough, 1906); off S.W.Ireland (Farran, 1920); L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); Seapoint, and Shanganagh (O'Riordan, 1971b).
Wexford: South Arklow Lightship, and Coningbeg Lightship (Gough, 1906).
Marine planktonic, widely distributed. Light-trap.

*Microarthridion fallax Perkins
Wexford: Ballyteige, S935065, estuarine mud, 5.vi.1988, J.M.C.H. (NMI).
Brackish, mud.

Microarthridion littorale (Poppe)
(= Tachidius littoralis Poppe)
Dublin: Malahide Estuary (Gurney, 1921; O'Riordan, 1971b).
Brackish, mud.

Tachidius discipes Giesbrecht
(= Paratachidius gracilis Brady and Robertson, male)
(= Tachidius brevicornis (Müller))
Cork: Ballydehob (O'Riordan, 1971b); L.Hyne, W096277, littoral peaty mud, 12.viii.1989, J.M.C.H. (NMI).
Down: Dundrum (Brady, 1902).
Dublin: Malahide (Gurney, 1921; O'Riordan, 1971b); Dublin Bay area (O'Riordan, 1971b); N.Bull Wall, O212360, muddy sand, 2.i.1989, 15.iv.1989, J.M.C.H. (NMI).
Galway: Grattan Road Strand (Bodin and Jackson, 1989).
Mayo: Blacksod Bay (Farran, 1913).
Wexford: Ballyteige, S935065, light-trap, 1m, 6.vi.1988,

J.M.C.H. (NMI).
Brackish, mud. Light-trap.

Thompsonula hyaenae (I.C.Thompson)
Down: Kilclief (Williams, 1954).
Dublin: Dublin Bay area (O'Riordan, 1971b); N.Bull I., O2-3-, 31.iii.1954, K.M.Roe (NMI); Dalkey, 12.v.1959, C.E.O'Riordan (NMI); Portmarnock Strand, O248433, mid-shore sand, 10.ix.1988, J.M.C.H. (NMI).
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Meath: Drogheda Estuary (O'Riordan, 1971b).
Marine, littoral and sublittoral sand.

Family HARPACTICIDAE

Pending an imminent revision of the family by Hamond, the identifications of several of the species are provisional.

Harpacticus chelifer (O.F.Müller)
Clare: Scattery I. (Herdman, 1891).
Clare/Galway: Galway Bay (Herdman, 1891).
Cork: Berehaven (Herdman, 1891); L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985); Sherkin I., W008259, W014259, light-traps, 2.viii.1987, J.M.C.H. (NMI).
Donegal: Mulroy Bay, G.S.Brady (NMI).
Dublin: Dalkey (Roe, 1958); Seapoint (O'Riordan, 1971b); Dalkey area, inshore plankton, 12.v.1959, C.E.O'Riordan (NMI); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.; near Malahide, O239459, light-trap, 2m, sand, 29.iv.1984, J.M.C.H.; Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix.1984, J.M.C.H.
Galway: off Cleggan (Farran, 1903); Ballynakill Harbour (Farran, 1914b); Spiddal (Holmes, 1986).

Kerry: Templenoe, Kenmare Bay (Herdman, 1891); Valentia (I.C.Thompson, 1896).
Mayo: Clew Bay, and off Clare I. (Farran, 1913).
Marine, littoral, amongst algae. Light-trap.

Harpacticus flexus Brady and Robertson
Cork: L.Hyne (Holmes, 1985).
Donegal: L.Swilly (Brady, 1880).
Down: Newcastle (Brady, 1902); Kilclief (Williams, 1954); Strangford L. (Wells, 1963).
Dublin: Dalkey (O'Riordan, 1966); Dublin Bay area (O'Riordan, 1971b); N.Bull Wall, O212360, muddy sand, 2.i.1989, J.M.C.H. (NMI).
Galway: Ballynakill Harbour (Farran, 1913); Spiddal (Holmes, 1986); Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Mayo: Westport Bay (Brady and Robertson, 1873); Inishlyre Roads, Clew Bay, and Blacksod Bay (Farran, 1913).
Marine, shallow water sand and mud. Light-trap. First described from Westport Bay (Brady and Robertson, 1873).

Harpacticus gracilis Claus
(= Harpacticus chelifer, var. gracilis Claus)
Clare: Scattery I. (Herdman, 1891).
Cork: L.Hyne (Sloane et al. 1961; Thain et al. 1981; Holmes, 1985).
Down: Portaferry (Williams, 1954).
Dublin: Dalkey (Roe, 1958).
Galway: Ballynakill (Farran, 1913).
Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915); Blacksod Bay (Farran, 1915).
Marine, littoral, amongst algae. Light-trap. Pending the revision by Hamond, all records must be regarded as doubtful.

Harpacticus littoralis G.O.Sars
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961).
Dublin: Dalkey (Roe, 1958); N.Bull, and Dunlaoghaire (O'Riordan, 1971b).
Galway: Kilkieran Bay (Fives, 1969, 1970); Mutton I. (Fives, 1969).
Mayo: L.Leam, Blacksod Bay (Farran, 1913).
Inshore marine and brackish. Pending the revision by Hamond, all records must be regarded as doubtful.

Harpacticus obscurus T.Scott
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961).
Dublin: Dalkey (Roe, 1958); Dunlaoghaire (O'Riordan, 1971b).
Wexford: Ballyteige, S935065, shallow brackish pool, 5.vi.1988, J.M.C.H.
Marine and brackish, amongst algae.

Harpacticus tenellus G.O.Sars
Cork: L.Hyne, W095287, light-trap, 40m, 13.vii.1983, J.M.C.H. (NMI).
Galway: Roundstone Bay (Brady, 1902, as H. gracilis; Lang, 1948).
Marine sublittoral. Light-trap.

Harpacticus uniremis Krøyer
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, W014259, light-traps, 3.viii.1987, J.M.C.H. (NMI).
Donegal: Mulroy Bay, plankton tow, 22.v.1980, D.Minchin (NMI).
Down: Rossglass (Williams, 1954).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); Seapoint (O'Riordan, 1971b); Malahide, 9.ix.1885 (NMI); near Malahide, O239459, light-trap, 2m, sand, 29.iv.1984, J.M.C.H.; Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H.
Galway: Spiddal (Holmes, 1986).

Mayo: Blacksod Bay (Farran, 1913).
Marine. Inshore planktonic. Light-trap.

Tigriopus brevicornis (O.F.Müller)
Clare: Great Isle of Aran (Brady and Robertson, 1873, as Harpacticus fulvus Fischer); Scattery I. (Herdman, 1891, as H. fulvus).
Cork: Carrigathorna, near L.Hyne (Goss-Custard et al., 1979, as T. fulvus); L.Hyne (Holmes, 1983); Toormore Bay, V8429, viii.1977, J.M.C.H. (NMI).
Donegal: Kinny Lough (Brady, 1880, as H. fulvus).
Down: Ardglass and Killard (Williams, 1954); Strangford L. (Boyd, 1973b).
Dublin: Malahide (Gurney, 1921, as T. fulvus); Dalkey (Roe, 1958); Sandycove, O2528, 6.xii.1980, J.M.C.H. (NMI).
Galway: Coast of Co.Galway (Brady and Robertson, 1873, as H. fulvus); Dogs Bay, near Roundstone, L6938, rock-pools, 9.vi.1983, J.M.C.H.
Kerry: Valentia Harbour (I.C.Thompson, 1897, as H. fulvus); Inishtearaght, V1-9-, small rock pool at north landing point, 1985, G.A.Walton.
Brackish. Abundant in rock pools high on the shore. Tolerant of low salinity and low oxygen levels, and resistant to the effects of widely fluctuating temperatures. T. brevicornis is the only species of the genus to occur around the British Isles (Božić, 1960), and all records of T. fulvus or H. fulvus must undoubtedly refer to this species.

Zaus abbreviatus G.O.Sars
Dublin: Dalkey (Roe, 1958).
Mayo: Blacksod Bay (Farran, 1913).
Marine, amongst algae.

Zaus goodsiri Brady

Dublin: Dalkey (O'Riordan, 1966); Dublin Bay, O283274, 12.5m, sand, 31.iii.1982, J.G.Wilson (NMI).
Marine, sublittoral.

Zaus spinatus Goodsir
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985); Sherkin I., W008259, light-trap, 10m, sand, 3.viii.1987, J.M.C.H.
Down: Newcastle (Brady, 1902); Ardglass and Kilclief (Williams, 1954).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1971b); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H.
Galway: Ballynakill (Farran, 1913); Spiddal (Holmes, 1986).
Kerry: Ventry Bay (Brady and Robertson, 1873, as Z. spinosus).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, littoral, amongst algae. Light-trap.

Family TISBIDAE

Cholidya polypi Farran
Off south west of Ireland (Farran, 1914a).
Marine. First described from a deep-water octopus trawled off the S.W. of Ireland (Farran, 1914a). The Fisheries Station was S.R.331. 51° 12´ N. 11° 55´ W. 610-680 fathoms. 9.v.1906 (Massy, 1909). However, in NMI there is a slide made by G.P.Farran and labelled "Copepod parasites of octopus. S.R.300",(52° 02´ N. 10° 55´ W. 5.ii.1906), with four specimens of this species.

*Idyella exigua G.O.Sars
Cork: L.Hyne, W097280, light-trap, 2m, 25.vii.1988, J.M.C.H. (NMI).
Marine. Light-trap.

Sacodiscus fasciatus (Norman)
(= Aspidiscus fasciatus Norman)
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1983); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Dublin: Dalkey I., O2726, laminarian holdfasts, 11.iii.1952, 13.vi.1952, 2.x.1952, K.M.Roe (NMI); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.
Mayo: Blacksod Bay (Farran, 1913).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, on algae. Light-trap. In L.Hyne, particularly abundant in the rapids area.

Sacodiscus littoralis (G.O.Sars)
(= Aspidiscus littoralis G.O.Sars)
Antrim: Larne (Pearson, 1905, as Scutellidium fasciatum (Boeck)).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1980); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Down: Newcastle (Brady, 1902, as Scutellidium fasciatum).
Dublin: Dalkey I., O2726, laminarian holdfast, 2.x.1952, K.M.Roe (NMI); Dalkey I., O279261, 20.ix.1986, J.M.C.H.
Galway: Clifden (Brady and Robertson, 1873, as Aspidiscus fasciatus; Brady, 1880, as Scutellidium fasciatum); Ballynakill Harbour (Farran, 1913); Spiddal (Holmes, 1986).
Kerry: Ventry Bay (Brady and Robertson, 1873, as Aspidiscus fasciatus; Brady, 1880, as Scutellidium fasciatum).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, on algae. Light-trap.

Scutellidium hippolytes (Krøyer)
Dublin: Dalkey (Roe, 1958).

Marine, amongst algae.

Scutellidium longicauda (Philippi)
(= Psamathe longicauda Philippi)
(= Scutellidium tisboides Claus)
Antrim: Larne Lough (Pearson, 1905).
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, light-trap, 10m, sand, 3.viii.1987, J.M.C.H. (NMI).
Down: Newcastle (Brady, 1902).
Dublin: Dalkey (Roe, 1958).
Galway: Clifden Bay (Brady and Robertson, 1873); Roundstone (Brady, 1880); Ballynakill Harbour (Farran, 1913); Spiddal (Holmes, 1986).
Mayo: Blacksod Bay (Farran, 1913).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, amongst algae. Light-trap.

Genus Tisbe Lilljeborg. The number of species described in the genus Tisbe has increased dramatically in recent years (see Bodin, 1988) and the taxonomy of the group is in urgent need of rationalization. Lang (1948) is taken therefore as the definitive work for the present list and no attempt has been made to re-interpret the older records in the context of the modern literature.

Tisbe angusta (G.O.Sars)
(= Idya angusta G.O.Sars)
(= Idyaea angusta (G.O.Sars))
Mayo: Elly Bay, Blacksod Bay (Farran, 1913, 1914b).
Marine.

Tisbe clodiensis Battaglia and Fava
Clare: Finnavarra (Fava, 1983).

Galway: Carna (Fava, 1983).
Marine, amongst algae.

*Tisbe elongata (A.Scott)
Cork: Courtmacsherry Bay, W5-4-, from gills of lobster, 18.x.1986, J.Dorman (NMI).
Marine. Associated with the lobster, Homarus gamarus (L.) (Leigh-Sharpe, 1935).

Tisbe ensifer Fischer
(= Idya ensifera (Fischer)
Down: Killard (Williams, 1954).
Dublin: Dunlaoghaire (O'Riordan, 1971b).
Marine.

Tisbe furcata (Baird)
(= Idya furcata (Baird))
(= Idyaea furcata (Baird))
Clare: Finnavarra (Fava, 1983).
Clare/Galway: Galway Bay (Boyd, 1973a).
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985).
Donegal: Killybegs (Herdman, 1891).
Down: Newcastle and Dundrum (Brady, 1902); Killard (Williams, 1954); Strangford L.(Williams, 1954; Wells, 1963; Holmes and Jeal, 1987).
Dublin: Malahide (Gurney, 1921); Dalkey (Roe, 1958; O'Riordan, 1966).
Galway: off Cleggan (Farran, 1903); Ballynakill Harbour (Farran, 1914b); Mutton I., and Kilkieran Bay (Fives, 1969); Spiddal (Holmes, 1986).
Galway/Mayo: off W. of Ireland (Brady and Robertson, 1873; Farran, 1905).
Kerry: Valentia (I.C.Thompson, 1900).
Mayo: Blacksod Bay (Farran, 1913).

Marine, amongst algae. Light-trap. Because of the uncertainty concerning the identity of the true T. furcata, all published records (except for Fava (1983)) are suspect. T. furcata probably does occur abundantly all round the coast but the older records may include to other species.

Tisbe holothuriae Humes
Clare: Finnavarra (Fava, 1983).
Galway: Carna (Fava, 1983).
Marine.

Tisbe longicornis (T.Scott and A.Scott)
(= Idyaea longicornis (T.Scott and A.Scott))
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985).
Mayo: off Clare I. (Farran, 1913).
Marine, amongst algae. Light-trap.

Tisbe minor (T.Scott and A.Scott)
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966).
Marine, amongst algae. Light-trap.

Tisbe reticulata Bocquet
Clare: Finnavarra (Fava, 1983).
Galway: Carna (Fava, 1983).
Marine, amongst algae.

Tisbe tenera (G.O.Sars)
(= Idya tenera G.O.Sars)
(= Idyaea tenera (G.O.Sars))
Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915); Blacksod Bay (Farran, 1915).
Marine, sublittoral, amongst algae.

Family PORCELLIDIIDAE

Genus Porcellidium Claus. Due to recent taxonomic changes, most of the older records of P. viride (Philippi), P. fimbriatum Claus, the two most commonly used names, and also P. subrotundatum Norman are probably referable to P. sarsi (Bocquet, 1948).

Porcellidium lecanoides Claus
Mayo: Blacksod Bay (Farran, 1913); Achill I., shore coll., x.1970, E.Brandt (NMI).
Marine, amongst algae.

*Porcellidium ovatum Haller
Cork: L.Hyne (Holmes, 1985, as P. tenuicauda and P. viride); S.shore, L.Hyne, W097280, algae, 15.viii.1988, J.M.C.H. (NMI).
Marine. A warm-water species, widely distributed in the Mediterranean and Indo-Pacific (Lang, 1948). It has not been previously recorded from the North Atlantic. Material from the Bahamas described under this name (Geddes, 1968) appears to belong to a separate species.

*Porcellidium sarsi Bocquet
Antrim: Larne Lough (Pearson, 1905, as P. fimbriatum).
Cork: L.Hyne (Sloane et al., 1961, as P. viride (NMI)); Log 25, Berehaven, viii.1885, R.I.A. (NMI) (see Haddon, 1886); Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H.; Barloge, near L.Hyne, littoral algae, 22.ix.1987, J.M.C.H. (NMI).
Down: Newcastle (Brady, 1902, as P. fimbriatum); Strangford L. (Williams, 1954, as P. fimbriatum).
Dublin: Dalkey (Roe, 1958, as P. viride (NMI)).
Galway: Birtirbuy and Clifden Bays (Brady and Robertson, 1873, as P. fimbriatum (NMI), P. viride, and P. subrotundatum);

Killeany Bay (Herdman, 1891, as P. subrotundatum); Ballynakill Harbour (Farran, 1913, as P. fimbriatum); Mutton I. (Fives, 1969, as P. fimbriatum); Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).
Kerry: Ventry Bay (Brady and Robertson, 1873, as P. fimbriatum and P. viride); Valentia Harbour (I.C.Thompson, 1897, as P. viride).
Mayo: Westport Bay (Brady and Robertson, 1873, as P. viride); Elly Bay, Blacksod Bay (Farran, 1913, 1914b, as P. fimbriatum).
Marine, amongst algae. Light-trap.

Porcellidium tenuicauda Claus
Cork: L.Hyne (Sloane et al., 1961); Whirlpool Cliff, L.Hyne, W100283, light-trap, 20m, 22.viii.1983, D.Minchin (NMI).
Kerry: Ventry Bay (Brady and Robertson, 1873).
Galway: Birtirbuy and Clifden Bays (Brady and Robertson, 1873).
Marine, amongst algae. Light-trap.

Family PELTIDIIDAE

Alteutha depressa (Baird)
(= Peltidium crenulatum Brady)
(= Alteutha crenulata (Brady))
Cork: L.Hyne (Sloane et al., 1961); N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958, also as A. sarsi Monard; O'Riordan, 1966); Sandycove, O260280, rock-pool, 24.vi.1989, J.M.C.H. (NMI).
Galway: Roundstone (Brady, 1880); off Cleggan (Farran, 1903);Ballynakill (Farran, 1913); Spiddal (Holmes, 1986, as P. sarsi (NMI)).
Galway/Mayo: Killary Harbour (Farran, 1913).

Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, amongst algae. Light-trap. Grey with paler bands when alive.

Alteutha interrupta (Goodsir)
(= Alteutha bopyroides Claus)
Antrim: Rathlin I. (I.C.Thompson and A.Scott, 1897; Lang, 1948); off Whitehead, and Larne Lough (Pearson, 1905).
Cork: Berehaven (Herdman, 1891); Fastnet (Gough, 1906); L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1980); Gascanore, Sherkin I., V9923, 17.viii.1978, M.Murphy; Sherkin I., W008259, W014259, light-traps, 3.viii.1987, J.M.C.H.
Donegal: Mulroy Bay, plankton tow, 22.v.1980, D.Minchin.
Down: Rossglass and Strangford L. (Williams, 1954); Ballyhenry I., Strangford L., J575520, light-trap, 1m, 21.iv.1984, F.Jeal.
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); Dublin Bay, O283274, 12.5m, sand, 13.v.1981, J.G.Wilson (NMI); "The Forty Foot", Sandycove, O259281, light-traps, 10m, 5.ix.1982, 9.i.1983, J.M.C.H.; near Malahide, O239459, light-trap, 2m, sand, 29.iv.1984, J.M.C.H.; Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix.1984, J.M.C.H.; Dalkey I., O279261, 20.ix.1986, J.M.C.H.; Seapoint, O227291, 1.vii.1989, J.M.C.H. (NMI).
Galway: Ballynakill Harbour (Farran, 1913); Mutton I., and Kilkieran Bay (Fives, 1969); Spiddal (Holmes, 1986).
Galway/Mayo: Killary Harbour (Farran, 1914b).
Kerry: Ballinskelligs Bay (Malcomson, 1886 (NMI)); Valentia (I.C.Thompson, 1900).
Mayo: Elly Bay, Blacksod Bay (Farran, 1914b).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, amongst algae. Abundant in light-trap. Brick-red colour when alive.

Alteutha oblonga (Goodsir)
(= A. purpurocincta Norman)
Antrim: Whitehead, and Larne Lough (Pearson, 1905, as A. depressum, probably this species).
Clare: Carrigaholt (Herdman, 1891, as A. depressa, probably this species).
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H.
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); Dublin Bay, O283274, 12.5m, sand, 31.iii.1982, 6.v.1982, J.G.Wilson.
Galway: Clifden Bay (Brady and Robertson, 1873, as A. purpurocincta; Brady, 1880, as Peltidium depressum); Ballynakill (Farran, 1913); Mutton I. (Fives, 1969, as A. depressa, probably this species); Spiddal (Holmes, 1986).
Kerry: Valentia (I.C.Thompson, 1900, as A. depressa, probably this species).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, amongst algae. Light-trap. Yellow with purple bands when alive.

Alteutha roeae Hicks
Dublin: Dalkey (Roe, 1958, as Alteutha sp.; Hicks, 1982).
Marine, laminarian holdfast.

Peltidium purpureum Philippi
(= Alteutha purpurea (Philippi))
Cork: L.Hyne (Holmes, 1980).
Donegal: The Wee Sea, Mulroy Bay, C1939, vii.1984, P.Somerfield.
Kerry: Valentia (I.C.Thompson, 1900).
Marine, amongst algae. Light-trap. Bright red colour when alive. Colour fades rapidly on preservation in alcohol.

Peltidium robustum (Claus)
Dublin: Dalkey (Roe, 1958).
Marine. The single Irish record is based on a female specimen discovered by Roe in a rock pool in the Ascophyllum zone, Dalkey Island, on 3.xi.1952 (NMI). While it is certainly not the common P. purpureum, its assignment to P. robustum is questionable. There is a need for more material to be collected, for its precise identity to be established.

Family CLYTEMNESTRIDAE

Clytemnestra rostrata (Brady)
Cork: L.Hyne (Holmes, 1980); Gascanore, Sherkin I., V9923, plankton tow, 6.vii.1978, M.Murphy.
Mayo: 40 miles off coast of Co.Mayo (Farran, 1908).
Marine, planktonic. Curiously, not so far taken in a light-trap.

Clytemnestra scutellata Dana
Clare/Galway: Galway Bay (Boyd, 1973a).
Marine, planktonic.

Family TEGASTIDAE

Parategastes sphaericus (Claus)
Cork: L.Hyne (Holmes, 1985).
Dublin: Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix.1984, J.M.C.H. (NMI).
Mayo: Inishlyre Roads, Clew Bay, and Blacksod Bay (Farran, 1913).
Marine, amongst algae. Light-trap.

Tegastes clausi G.O.Sars
Cork: L.Hyne (Holmes, 1985).

Dublin: Dalkey (Roe, 1958, as T. nanus).
Galway: Spiddal (Holmes, 1986).
Marine, amongst algae. Light-trap.

Tegastes falcatus (Norman)
Cork: L.Hyne (Holmes, 1985).
Dublin: Dalkey (O'Riordan, 1966); Dalkey I., O2726, 11.iii.1952, K.M.Roe (NMI); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H. (NMI).
Marine. Light-trap.

Tegastes nanus G.O.Sars
Cork: L.Hyne (Holmes, 1985).
Mayo: Blacksod Bay (Farran, 1913).
Marine. Light-trap.

Family THALESTRIDAE

Amenophia peltata Boeck
(= Thalestris peltata (Boeck))
Dublin: Dalkey (Roe, 1958).
Kerry: Valentia Harbour (I.C.Thompson, 1896).
Marine.

Amenophia pulchella G.O.Sars
Dublin: Dalkey (Roe, 1958).
Marine. The single specimen (NMI) found in a rock crevice on Dalkey Island was a juvenile female and showed abnormalities in the leg setation (Roe, 1958). There is a need for fresh material to be collected to verify this somewhat dubious record.

Dactylopodella flava (Claus)
(= Dactylopus flavus Claus)

Cork: Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI); Sherkin I., W008259, light-trap, 10m, sand, 3.viii.1987, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958); Dunlaoghaire (O'Riordan, 1971b, as D. clypeata Sars (NMI)).
Galway: Ballynakill (Farran, 1913).
Mayo: Clew Bay (Brady, 1880); Inishlyre Roads, and Blacksod Bay (Farran, 1913).
Marine, amongst algae. Light-trap.

Dactylopusia micronyx G.O.Sars
(= Dactylopodia micronyx (G.O.Sars))
Dublin: Baldoyle (O'Riordan, 1971b).
Galway/Mayo: off Killary Harbour (Farran, 1913, as a variety of D. thisboides, possibly this species; Lang, 1948).
Brackish, mud.

Dactylopusia neglecta G.O.Sars
(= Dactylopodia neglecta (G.O.Sars))
Cork: Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Down: Dundrum (Brady, 1902, as Dactylopus tisboides, possibly this species; Lang, 1948).
Galway: Clifden (Brady and Robertson, 1873, as Dactylopus tisboides, possibly this species; Lang, 1948).
Brackish and marine. Light-trap.

Dactylopusia tisboides (Claus)
(= Dactylopus tisboides Claus)
(= Dactylopusia thisboides (Claus))
(= Dactylopodia tisboides (Claus))
Antrim: Ballygalley Bay, and Larne (Pearson, 1905, probably this species).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985);

Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Down: Kilclief (Williams, 1954); Strangford L. (Williams, 1954; Wells, 1963).
Dublin: Malahide (Gurney, 1921); Dalkey (Roe, 1958; O'Riordan, 1966); Seapoint (O'Riordan, 1971b).
Galway: Roundstone Bay (Brady, 1902, probably this species); off Cleggan (Farran, 1903), Ballynakill Harbour (Farran, 1914b); Kilkieran Bay, Pseudocucumas ground, 20.v.1979, D.McGrath (NMI).
Mayo: Westport Bay (Brady and Robertson, 1873, probably this species); Elly Bay, Blacksod Bay (Farran, 1913, 1914b).
Marine, littoral, amongst algae. Light-trap.

Dactylopusia vulgaris G.O.Sars
(= Dactylopodia vulgaris (G.O.Sars))
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985); Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Dublin: Dalkey (O'Riordan, 1966); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.; Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H.; Seapoint, O227291, 1.vii.1989, J.M.C.H.
Galway: Ballynakill Harbour (Farran, 1913, 1914b); Spiddal (Holmes, 1986); Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, amongst algae. Light-trap. Some of the records may refer to the var. dissimilis Brian. Both the typical form and the variety appear to co-exist. Specimens of the variety dissimilis are confirmed, based on an examination of the material in NMI, from Dalkey (Roe Collection), Spiddal, and L.Hyne.

Diarthrodes andrewi (T.Scott)
(= Westwoodia andrewi (T.Scott))
Mayo: Blacksod Bay (Farran, 1915).
Farran's (1915) record from Blacksod Bay was based on a single specimen and has not been confirmed since.

Diarthrodes assimilis (G.O.Sars)
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1983).
Marine, amongst algae.

Diarthrodes major (T.Scott and A.Scott)
(= Westwoodia monensis (Brady))
Cork: L.Hyne, W0928, viii.1952, K.M.Roe (NMI); N.shore, L.Hyne, W093288, gravel under stones, 8.vii.1982, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Galway: Ballynakill (Farran, 1913).
Mayo: Clew Bay (Farran, 1913).
Marine, littoral, amongst algae.

Diarthrodes minutus (Claus)
(= Westwoodia minuta Claus)
Cork: L.Hyne (Holmes, 1985).
Mayo: Westport Bay (Brady and Robertson, 1873); Blacksod Bay (Farran, 1913).
Marine, amongst algae. Light-trap.

Diarthrodes nobilis (Baird)
(= Westwoodia nobilis (Baird))
Antrim: Larne Lough (Pearson, 1905).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).

Donegal: Mulroy Lough (Brady, 1880).
Dublin: Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971b); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H.
Galway: Roundstone (Brady, 1880); Ballynakill (Farran, 1913); Mutton I. (Fives, 1969).
Kerry: Ventry Bay (Brady and Robertson, 1873).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, amongst algae. Light-trap.

Diarthrodes ponticus (Kričagin)
(= Westwoodia saturni Farran)
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985); Western Trough, L.Hyne, W095287, light-trap, 35m, 9.vii.1982, J.M.C.H. (NMI).
Galway: Fahy Bay, Ballynakill (Farran, 1913).
Marine, amongst algae. Light-trap.

Diarthrodes pygmaeus (T.Scott and A.Scott)
(= Westwoodia pygmaea (T.Scott and A.Scott))
Cork: Carrigathorna, near L.Hyne (Goss-Custard et al., 1979).
Down: Killard (Williams, 1954).
Galway: Ballynakill (Farran, 1913).
Mayo: Blacksod Bay (Farran, 1913).
Marine, amongst algae. Irish records are in need of confirmation by fresh material.

Donsiella limnoriae Stephensen
Galway: Rossaveel, from Lignoria lignorum (Rathke), 1987, P.Somerfield.
Waterford: Dunmore East (Holmes and Jeal, 1987).
Marine, associated with gribble (L. lignorum). Light-trap. In the light of the recent systematic revision of the Donsiellinae by Hicks (1988), the two specimens from Dunmore

East were re-examined. They do not correspond to the new D. anglica Hicks, known from Southampton, and it is clear that the record by Holmes and Jeal (1987) is correct, despite Hicks (1988).

Idomene forficata Philippi
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, amongst algae.

Genus Paradactylopodia Lang. Two species of this genus, P. brevicornis (Claus) and P. latipes (Boeck), are known to occur around the British Isles. However, the criterion used by Lang (1948) for separating the two was based on whether the inner principal caudal seta was thickened at the base, or not. Unfortunately, this feature is a regeneration artifact. Many specimens have the principal caudal setae broken off altogether, or in various stages of regeneration. While the genus Paradactylopodia is easily recognised, all specific records of P. brevicornis and P. latipes must be regarded as interchangable. There are two distinct forms living in L.Hyne, one yellow with orange bands and clearly the P. brevicornis of Sars, and the other with an elaborate red pattern, and several other morphological distinctions, notably in the shape of the male leg 2 endopod. Which of these forms, if either, correspond to the brevicornis of Claus and the latipes of Boeck is not clear. For the moment, the published records are listed.

Paradactylopodia brevicornis (Claus)
(= Dactylopus brevicornis Claus)
Antrim: Larne Lough (Pearson, 1904).
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Marine, in Laminaria holdfasts. Light-trap.

Paradactylopodia latipes (Boeck)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Marine. Light-trap.

Parathalestris clausi (Norman)
(= Thalestris clausi Norman)
Antrim: Larne Lough (Pearson, 1905).
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Down: Newcastle and Dundrum (Brady, 1902).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.; Seapoint, O227291, i.vii.1989, J.M.C.H.
Galway: Birtirbuy and Clifden Bays (Brady and Robertson, 1873); Roundstone (Brady, 1902); off Cleggan (Farran, 1903); Ballynakill (Farran, 1913); Spiddal (Holmes, 1986); Grattan Road Strand (Bodin and Jackson, 1989).
Kerry: Valentia Harbour (I.C.Thompson, 1897).
Mayo: Westport Bay (Brady and Robertson, 1873); Clew Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, littoral, amongst algae. Light-trap.

Parathalestris croni (Krøyer)
(= Thalestris krohnii Krøyer)
(= Halithalestris krohni (Krøyer))
Antrim: Rathlin I. (I.C.Thompson and A.Scott, 1897; Lang, 1948); Larne Lough (Pearson, 1905).
Cork: off S.W. of Ireland (Farran, 1920).
Marine, surface plankton.

Parathalestris harpactoides (Claus)
(= Thalestris harpactoides Claus)
(= Parathalestris harpacticoides (Claus))

Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985); Sherkin I., W008259, W014259, light-traps, 3.viii.1987, J.M.C.H.
Donegal: Killybegs (Brady and Robertson, 1873).
Down: The Dorn, Strangford L., J5956, iii.1983, F.Jeal.
Dublin: Dalkey (Roe, 1958); Malahide Inlet, 2-3 fathoms, 27.vii.1908, Dublin Bay Marine Biological Committee (NMI); Dalkey I., O279261, 20.ix.1986, J.M.C.H. (NMI).
Galway: Roundstone Bay (Brady and Robertson, 1873); off Cleggan (Farran, 1903); Ballynakill Harbour (Farran, 1913, 1914b); Spiddal (Holmes, 1986); Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Kerry: Ventry Bay (Brady and Robertson, 1873).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913); Clare I.(Southern, 1915).
Marine, amongst algae. Light-trap.

Parathalestris hibernica (Brady and Robertson)
(= Thalestris hibernica Brady and Robertson)
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, W014259, light-traps, 3.viii.1987, J.M.C.H. (NMI).
Donegal: N.Water, Mulroy Bay, vii.1980, M.Parker.
Dublin: Dalkey (Roe, 1958).
Galway: Ballynakill Harbour (Farran, 1913); Spiddal (Holmes, 1986).
Mayo: Westport Bay (Brady and Robertson, 1873); Elly Bay, Blacksod Bay (Farran, 1913, 1914b).
Marine, littoral, amongst algae. Light-trap. First described from Westport Bay (Brady and Robertson, 1873).

Parathalestris intermedia Gurney
Cork: Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Dublin: Dalkey (O'Riordan, 1966); Dublin Bay area (O'Riordan, 1971b); Shanganagh, O289136, Enteromorpha, 1.vii.1952, M.Duhig

(NMI); N.Bull, O2-3-, weed wash, 28.ii.1956, F.O'Gorman (NMI); Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix.1984, J.M.C.H.; N.Bull Wall, O212360, muddy sand, 15.iv.1989, J.M.C.H. (NMI).
Galway: Spiddal (Holmes, 1986).
Marine, amongst algae. Light-trap. Records from Dalkey and L.Hyne (Roe 1958, 1960; Sloane et al, 1961) were based on misidentifications and are omitted.

Parathalestris irelandica Roe
Dublin: Dalkey (Roe, 1958); Blackrock area (Murphy and Holmes, 1990).
Galway: Spiddal (Holmes, 1986); Carna (Bodin and Jackson, 1989).
Marine, amongst algae. Light-trap. First described from Dalkey (Roe, 1958). Outside Ireland it is recorded from Brittany (Bodin, 1988).

Phyllothalestris mysis (Claus)
(= Thalestris mysis Claus)
Antrim: off Whitehead, Ballygalley Bay, and Larne (Pearson, 1905).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1983); Roaringwater Bay, W0130, 3.vii.1980, J.M.C.H.(NMI); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Down: Ballyhenry I., Strangford L., J575520, light-trap, 1m, 21.iv.1984, F.Jeal.
Dublin: Dalkey (Roe, 1958); 40-foot, Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.
Galway: Roundstone and Clifden (Brady and Robertson, 1873); Ballynakill (Farran, 1913); Spiddal (Holmes, 1986); Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).
Mayo: Westport (Brady and Robertson, 1873); Inishlyre Harbour, Clew Bay (Farran, 1913); Elly Bay, Blacksod Bay (Farran,

1913, 1914b); St.63, 40 miles off Achill Head, 220 fathoms, 4.vii.1890, R.D.S.(NMI) (see Holt, 1892).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Marine, amongst algae. Light-trap.

Rhynchothalestris helgolandica (Claus)
(= Thalestris helgolandica Claus)
Dublin: Dalkey (O'Riordan, 1966); Dalkey I., O2726, Laminaria creek, 25.iv.1952, K.M.Roe (NMI).
Galway: off Cleggan (Farran, 1903, as T. heligolandica); Ballynakill (Farran, 1913).
Mayo: Blacksod Bay (Farran, 1913).
Marine, amongst algae.

Rhynchothalestris rufocincta (Brady)
(= Thalestris rufocincta Brady)
Antrim: off Whitehead, and Larne Lough (Pearson, 1905).
Cork: L.Hyne (Roe, 1960, also as Parathalestris intermedia (NMI); Sloane et al., 1961, also as P. intermedia (NMI); Holmes, 1983).
Donegal: L.Swilly and Mulroy Bay (Brady, 1880).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1966); St.11A, Dunlaoghaire, O248298, dredge, 8.2m, 2.vi.1966, C.E.O'Riordan (NMI); "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.
Galway: Clifden Bay (Brady and Robertson, 1873, as Thalestris helgolandica; Brady, 1880); Birtirbuy Bay (Brady, 1880); off Cleggan (Farran, 1903); Ballynakill (Farran, 1913); Spiddal (Holmes, 1986); Kilkieran Bay, Pseudocucumas ground, maerl dunes, 19.v.1980, D.McGrath (NMI).
Kerry: Ventry Bay (Brady, 1880).
Mayo: Clew Bay (Brady, 1880); Blacksod Bay (Farran, 1913).
Marine, amongst algae. Light-trap.

Thalestris longimana Claus
Antrim: Ballygalley Bay and Larne (Pearson, 1905).
Cork: Berehaven (Herdman, 1891); L.Hyne (Holmes, 1980); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H. (NMI).
Donegal: Killybegs (Brady and Robertson, 1873); L.Swilly (Brady, 1880).
Down: Newcastle (Brady, 1902); Killard (Williams, 1954); Ballyhenry I., Strangford L., J575520, light-trap, 1m, 21.iv.1984, F.Jeal.
Dublin: Dalkey (Roe, 1958); Dublin Bay, O253274, 12.5m, sand, 31.iii.1982, J.G.Wilson; "The Forty Foot", Sandycove, O259281, light-trap, 10m, 5.ix.1982, J.M.C.H.; near Malahide, O239459, light-trap, 2m, sand, 29.iv.1984, J.M.C.H.
Galway: off Cleggan (Farran, 1903); Ballynakill (Farran, 1913); Mutton I. (Fives, 1969); Spiddal (Holmes, 1986).
Kerry: Valentia Harbour (Brady and Robertson, 1873; I.C.Thompson, 1896, 1897); Templenoe, Kenmare Bay (Herdman, 1891).
Mayo: Blacksod Bay (Farran, 1913).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H.
Wicklow: Greystones, O299120, rock-pool, viii.1970, J.M.C.H.
Marine, amongst algae. Light-trap.

Thalestris rufoviolascens Claus
Cork: L.Hyne (Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Marine, amongst algae. Light-trap.

Family BALAENOPHILIDAE

Balaenophilus unisetus Aurivillius
Mayo: Inishkea South Whaling Station, from baleen of blue

whale, Balaenoptera musculus (L.) (Lillie, 1910).
Marine. Abundant on the baleen plates of rorquals (Vervoort and Tranter, 1961).

Family PARASTENHELIIDAE

Parastenhelia anglica Norman and T.Scott
Down: Strangford L. (Wells, 1963).
Marine.

Parastenhelia spinosa (Fischer)
(= Microthalestris littoralis G.O.Sars)
(= Microthalestris forficula (Claus))
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961); Carrigathorna, near L.Hyne (Goss-Custard et al., 1979); S.shore, L.Hyne, W097280, algae, vii.1988, J.M.C.H. (NMI).
Down: Ardglass and Kilclief (Williams, 1954).
Dublin: Dalkey (Roe, 1958); Sandycove, O260280, Cladophora, 25.ii.1989, J.M.C.H. (NMI).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, littoral, amongst algae. Roe (1958, 1960) recognised two varieties, littoralis Lang (sic) and penicillata Willey.

Family DIOSACCIDAE

Amonardia normani (Brady)
Cork: L.Hyne (Roe, 1960,; Holmes, 1983); Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958).
Galway: off Cleggan (Farran, 1903, as Dactylopus stromii (Baird)(NMI)); Ballynakill (Farran, 1913, as Amphiascus similis (Sars)); Spiddal (Holmes, 1986); Kilkieran Bay, Pseudocucumas ground, maerl dunes, 19.v.1980, ix.1980,

D.McGrath (NMI).
Mayo: Blacksod Bay (Farran, 1913, 1915, as Amphiascus similis).
Marine. Light-trap. Abundant amongst algae and in coarse sublittoral gravel.

Amonardia phyllopus (G.O.Sars)
(= Amphiascus phyllopus G.O.Sars)
Cork: L.Hyne (Roe, 1960, also as Ammonardia similis (NMI); Sloane et al., 1961, as Parathalestris intermedia Gurney (NMI); Holmes, 1985).
Dublin: Dalkey (Roe, 1958, also as Ammonardia similis (NMI)).
Mayo: Blacksod Bay (Farran, 1913).
Marine. Light-trap.

Amphiascoides brevifurca (Czerniavski)
(= Amphiascella brevifurca (Czerniavski))
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Marine. Light-trap.

Amphiascoides debilis (Giesbrecht)
(= Amphiascus debilis (Giesbrecht))
(= Amphiascella debilis (Giesbrecht))
Cork: N.shore, L.Hyne, W093288, gravel under stones, 8.vii.1982, J.M.C.H. (NMI); The Goleen, L.Hyne, W096277, peaty mud, 12.viii.1989, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958).
Galway: Ballynakill (Farran, 1913); Silver Strand (Bodin and Jackson, 1989).
Marine.

Amphiascoides limicolus (Brady)
(= Stenhelia limicola Brady)

(= Amphiascella limicola (Brady))
Donegal: Carrick (Brady, 1900 (NMI)).
Dublin: Liffey Estuary (O'Riordan, 1971b, as A. debilis (NMI)); N.Bull, and Clontarf (O'Riordan, 1971b, as A. nana (Sars) (NMI)); N.Bull Wall, 02-3-, 1.v.1956, F.O'Gorman (NMI).
Brackish, muddy sediments.

Amphiascoides nanus (G.O.Sars)
(= Amphiascoides nana (G.O.Sars))
Dublin: Clontarf (O'Riordan, 1971b).
Marine, fine sand.

Amphiascoides subdebilis (Willey)
(= Amphiascella subdebilis (Willey))
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Down: Strangford L. (Wells, 1963).
Marine. Light-trap.

Genus Amphiascopsis Gurney. A search through the reference material in NMI has revealed the presence of four distinct forms of this genus: A. cinctus (Claus), chocolate brown in colour, (similar to the sp.1 of Lang, 1965); the Amphiascus cinctus of Sars, a striking form marked with transverse purple bands and a dorsal longitudinal purple stripe; A. obscurus (G.O.Sars), synonymised with A. cinctus by Lang (1948), but recognisably distinct; and A. thalestroides (G.O.Sars). In view of the uncertainty about the A. cinctus complex, all previous records must be treated with caution.

Amphiascopsis cinctus (Claus)
(= Dactylopus cinctus Claus)
Cork: L.Hyne (Roe, 1960, as A. thalestroides (NMI)); Sloane et al., 1961 (NMI); N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI); S.shore, L.Hyne, W097280, algae,

vii.1988, J.M.C.H. (NMI).
Marine. Light-trap.

Amphiascopsis cinctus, sensu Sars
Cork: L.Hyne (Roe, 1960, as A. cinctus (Claus) (NMI); Holmes, 1983, as A. cinctus (Claus)); N.Quay, L.Hyne, W094288, 18.viii.1988, J.M.C.H. (NMI).
Galway: Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).
Mayo: Westport Bay (Brady and Robertson, 1873, as Dactylopus (?) cinctus, possibly this species); Blacksod Bay (Farran, 1913, as A. cinctus (Claus)).
Marine, amongst algae, and in nocturnal plankton tows. Lang (1965, p.266) discussed the possibility that the A. cinctus of Sars was distinct from the A. cinctus of Claus, but declined to rename the former.

Amphiascopsis obscurus (G.O.Sars)
(= Amphiascus obscurus G.O.Sars)
Dublin: Dalkey (Roe, 1958, as A. cinctus, (NMI)).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, amongst algae. This form is not the "A. cinctus (Claus) sp 1." of Lang (1965).

Amphiascopsis thalestroides (G.O.Sars)
Antrim: Ballygalley Bay, and Larne (Pearson, 1905, as Dactylopus stromii).
Cork: L.Hyne (Roe, 1960, as Paramphiascopsis longirostris (NMI); Holmes, 1985); Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Donegal: Killybegs (Brady and Robertson, 1873, as Dactylopus stromii).
Galway: Roundstone Bay (Brady, 1902, as Dactylopus stromii).

Kerry: Valentia Harbour and Ventry Bay (Brady and Robertson, 1873, as Dactylopus stromii).
Mayo: Clew Bay (Brady, 1880, as Dactylopus stromii).
Marine, amongst algae. Light-trap.

Amphiascus graciloides Klie
Cork: L.Hyne (Sloane et al., 1961, as A. minutus (NMI); Holmes, 1985); The Goleen, L.Hyne, W096277, mud, 10.viii.1989, J.M.C.H. (NMI).
Marine. Light-trap.

Amphiascus longarticulatus Marcus
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Marine.

Amphiascus minutus (Claus)
(= Dactylopus minutus Claus)
Cork: L.Hyne (Roe, 1960); Carrigathorna, near L.Hyne (Goss-Custard et al., 1979).
Dublin: Dalkey (Roe, 1958).
Mayo: Westport Bay (Brady and Robertson, 1873); Inishlyre Roads, Clew Bay (Farran, 1913).
Marine. In the collections of NMI there is material which corresponds to several forms of what has been called the 'minutus-group'(Lang, 1948). Whether any of these match the true A. minutus of Claus is uncertain, and whether the true A. minutus (Claus) actually occurs around Ireland remains conjectural.

Amphiascus parvus G.O.Sars
(= Amphiascus humphriesi Roe)
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961, as A. minutus and A. pacificus Sars (NMI); Holmes, 1985).

Dublin: Dalkey (Roe, 1958).
Marine. Light-trap. Lang's (1965, p.254) suggestion that A. humphriesi Roe was an aberrant A. parvus is followed here. A male and female (NMI), from L.Hyne, Aug.1952, and labelled 'Amphiascus pacificus', appear to represent half of the type material upon which A. humphriesi was based.

Amphiascus propinquus G.O.Sars
Dublin: Dalkey I., O2726, laminarian holdfasts, 29.v.1952, sand, Fucus serratus, 1.xii.1952, K.M.Roe (NMI).
Mayo: Blacksod Bay (Farran, 1915).
Marine.

Amphiascus tenuiremis (Brady and Robertson)
Cork: L.Hyne (Holmes, 1985).
Marine. Light-trap.

Amphiascus varians (Norman and T.Scott)
Cork: L.Hyne (Holmes, 1985).
Down: Strangford L. (Wells, 1963).
Marine, amongst algae. Light-trap.

Bulbamphiascus denticulatus (I.C.Thompson)
Down: Strangford L. (Wells, 1963).
Dublin: Dalkey, and Killiney Bay (O'Riordan, 1971b).
Marine, sublittoral coarse sand and mud.

Bulbamphiascus imus (Brady)
(= Stenhelia ima Brady)
(= Amphiascus imus (Brady))
Cork: L.Hyne (Holmes, 1985).
Donegal: off Moville, L.Foyle (MacDonald and McMillan, 1951).
Down: Strangford (Wells, 1963).
Dublin: Dalkey (Roe, 1958; O'Riordan, 1971b).

Galway: Carna (Bodin and Jackson, 1989).
Mayo: Clew Bay (Brady, 1880).
Marine, muddy sand. Light-trap. Tolerant of pollution (Moore and Pearson, 1986).

Diosaccus tenuicornis (Claus)
(= Nitokra tenuicornis (Claus))
Antrim: Larne (Pearson, 1905).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985); Sherkin I., W008259, W014259, light-traps, viii.1987, J.M.C.H.
Dublin: Dalkey (Roe, 1958).
Galway: Clifden Bay (Brady and Robertson, 1873); Roundstone Bay (Brady and Robertson, 1873; Brady, 1902); off Cleggan (Farran, 1903); Ballynakill Harbour (Farran, 1913, 1914b).
Mayo: Westport Bay (Brady and Robertson, 1873); Inishlyre Roads, Clew Bay (Farran, 1913); Elly Bay, Blacksod Bay (Farran, 1913, 1914b); Clare I. (Southern, 1915).
Marine, abundant amongst algae. Light-trap.

Diosaccus varicolor (Farran)
(= Amphiascus varicolor Farran)
(= Paradiosaccus varicolor (Farran))
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Mayo: Clare I. area (Farran, 1913); Elly Bay, Blacksod Bay (Farran, 1914b).
Marine. Light-trap. First described in the Clare Island Survey (Farran, 1913), but a precise locality was inadvertently omitted. Curiously, in light-trap samples taken in L.Hyne, females overwhelmingly outnumbered males.

Haloschizopera pygmaea (Norman and T.Scott)
(= Haloschizopera junodi (Monard))
Clare/Galway: Galway Bay (Moore and O'Reilly, 1989).
Cork: N.Quay, L.Hyne, W093288, 3m, mud, 18.viii.1988,

J.M.C.H., identity confirmed by C.G.Moore, (NMI).
Down: Strangford L. (Wells, 1963).
Marine, muddy sand.

Paramphiascella hispida (Brady)
(= Stenhelia hispida Brady)
(= Amphiascus hispidus (Brady))
Galway: Ballynakill (Farran, 1913).
Kerry: Ventry Bay (Brady, 1880).
Mayo: Clew Bay (Brady, 1880).
Marine, amongst algae.

Paramphiascella hyperborea (T.Scott)
Down: Strangford L. (Wells, 1963).
Marine.

Paramphiascella vararensis (T.Scott)
Cork: L.Hyne (Roe, 1960); N.Basin, L.Hyne, W097286, light-trap, 15m, 14.vii.1981, S.shore, L.Hyne, W097280, algae, 15.viii.1988, J.M.C.H. (NMI).
Marine. Light-trap.

Paramphiascopsis giesbrechti (G.O.Sars)
Dublin: Dalkey (Roe, 1958).
Marine.

Paramphiascopsis longirostris (Claus)
(= Amphiascus longirostris (Claus))
(= Amphiascus paracaudaespinosus Roe)
Cork: L.Hyne (Holmes, 1985); Sherkin I., W014259, light-trap, 4m, mud, 3.viii.1987, J.M.C.H. (NMI).
Down: Killard (Williams, 1954); Strangford L. (Wells, 1963).
Dublin: Dalkey (Roe, 1958, also as Pseudamphiascopsis attenuatus (NMI)); Dunlaoghaire (O'Riordan, 1971b); Seapoint,

O227291, 1.vii.1989, J.M.C.H. (NMI).
Galway: Spiddal (Holmes, 1986).
Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine. Light-trap.

Pseudamphiascopsis attenuatus (G.O.Sars)
(= Amphiascus attenuatus G.O.Sars)
(= Pseudamphiascopsis ismaelensis (Monard))
Cork: L.Hyne (Holmes, 1985).
Down: Strangford L. (Wells, 1963).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine. Light-trap.

Rhyncholaqena spinifer (Farran)
(=Amphiascus spinifer Farran)
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine. First described from off Killary Harbour (Farran, 1913).

Robertqurneya ilievecensis (Monard)
Down: Strangford (Wells, 1963).
Marine.

Robertqurneya similis (A.Scott)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Marine. Light-trap.

Robertqurneya simulans (Norman and T.Scott)
Galway/Mayo: off Killary Harbour (Farran, 1913, as Amphiascus simulans (Scott), possibly this species, or perhaps confused with R. similis (A.Scott).
Marine, sublittoral.

Robertsonia celtica (Monard)
Cork: L.Hyne (Holmes, 1985).
Dublin: Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971b); N.Bull Wall, O212360, mud, 2.i.1989, J.M.C.H. (NMI).
Marine, amongst weed and laminarian holdfasts, mud. Light-trap.

Stenhelia aemula (T.Scott)
Dublin: Dunlaoghaire (O'Riordan, 1971b).
Marine.

*Stenhelia gibba Boeck
Cork: Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI).
Marine, mud and gravel.

*Stenhelia giesbrechti T.Scott and A.Scott
Cork: Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI); N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, 5m, mud, 3.viii.1989, J.M.C.H. (NMI).
Marine, muddy sand. Light-trap.

Stenhelia normani (T.Scott)
Dublin: Dalkey (Roe, 1958).
Marine, amongst algae.

Stenhelia palustris (Brady)
Cork: Ballydehob, and Ballylickey Bridge (O'Riordan, 1971b); The Goleen, L.Hyne, W096277, mud, 10.viii.1989, J.M.C.H. (NMI).
Dublin: Malahide, and Dublin Bay area (O'Riordan, 1971b); Malahide Estuary, O234483, mud, 5.xi.1987, J.M.C.H. (NMI); N.Bull Wall, O212360, muddy sand, 15.iv.1989, J.M.C.H. (NMI).
Meath: Boyne Estuary (O'Riordan, 1971b).

Marine, brackish. Surface of estuarine mud.

Stenhelia reflexa (Brady and Robertson)
Cork: L.Hyne (Holmes, 1985).
Marine, mud. Light-trap.

Family METIDAE

Metis ignea Philippi
(= Ilyopsyllus coriaceus Brady and Robertson)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Galway: Roundstone Bay (Brady and Robertson, 1873).
Mayo: Blacksod Bay (Farran, 1913).
Marine, amongst weed and sponges and in mud. Exhibits semi-parasitic modifications but its associate is unknown.

Family AMEIRIDAE

Genus Ameira. This genus contains a number of species, all very similar and often poorly described. Pending a revision of the genus, and a reassessment of existing distribution records, all Irish records are regarded as tentative.

Ameira brevipes Kunz
Down: Strangford L. (Wells, 1963).
Marine.

Ameira longipes Boeck
Down: Strangford L. (Wells, 1963).
Dublin: Dalkey (Roe, 1958).
Marine, amongst algae.

Ameira minuta Boeck
Down: Strangford L. (Williams, 1954).
Dublin: Dalkey (Roe, 1958).
Mayo: Blacksod Bay (Farran, 1913).
Marine, amongst algae.

Ameira parvula (Claus)
(= Ameira tau (Giesbrecht))
Cork: L.Hyne (Holmes, 1985).
Galway: Ballynakill (Farran, 1913).
Marine, littoral. Light-trap.

Ameira scotti G.O.Sars
Cork: L.Hyne (Sloane et al., 1961).
Dublin: Dalkey (Roe, 1958).
Marine. Material in the Roe Collection (NMI) closely matches the A. parvula recorded by Holmes (1985).

Ameira tenella G.O.Sars
Cork: Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI).
Down: off Strangford Bar, and off Pawle I., Strangford L. (Williams, 1954, as A. attenuata I.C.Thompson).
Galway/Mayo: off Killary Harbour (Farran, 1913, as A. attenuata).
Marine, sublittoral mud and gravel. Farran (1913) listed a single specimen under "Ameira attenuata" but stated that it "agrees with Sars' figure as given under A. tenella" ! Lang (1948) regarded A. attenuata I.C.Thompson as unrecognisable and listed it under "Species incertae and incertae sedis". The single female specimen found near L.Hyne agrees with Sars' (1907) figures of A. tenella, so in all probability Farran's specimen is the same. Williams (1954) clearly followed Sars' (1911, p.397) suggestion that A. tenella was the same as A.

attenuata, and therefore a junior synonym, but was apparently unaware of the comments of Lang (1948). Recent authors (Wells, 1976; Bodin, 1988) list A. tenella and ignore A. attenuata.

*Ameira tenuicornis T.Scott
Galway: Kilkieran Bay, Pseudocucumas ground, maerl dunes, 19.v.1980, D.McGrath (NMI).
Marine, amongst algae.

Genus Ameiropsis G.O.Sars. A genus needing revision. Several different forms exist in the collections of the NMI, but to which species they should be assigned is a mystery. A. brevicornis Sars and A. mixta Sars, the two most commonly recorded species, are separated primarily on the relative lengths of the rami of leg 1, a feature difficult to assess being related to the way the appendage is lying when mounted on a microscopical slide. More useful features are to be found in the structure of the antenna 2 exopod.

Ameiropsis brevicornis G.O.Sars
Dublin: Dalkey (Roe, 1958).
Galway: Roundstone (Brady, 1880, as Ameira longipes).
Marine, amongst algae. Both the above records are considered very doubtful, but there is no way of reassessing the position at present.

Ameiropsis longicornis G.O.Sars
Dublin: Dalkey (Roe, 1958).
Mayo: Elly Bay, Blacksod Bay (Farran, 1913, 1915).
Marine, amongst algae.

Ameiropsis mixta G.O.Sars
Cork: L.Hyne (Sloane et al., 1961; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).

Marine. Light-trap. The above records must be regarded as provisional. Sars (1907) described and illustrated the antenna 2, exopod, distal joint, as "having one of the setae remarkably thickened, sabre-like". Examining the Roe material in the NMI, this terminal seta was observed to be thickened at the base but narrowing in a characteristic way half-way along, and widening terminally to an oblique cut-off, a consistent shape in all specimens examined and quite unlike that illustrated by Sars. Further, the specimen recorded by Holmes (1985) also has this peculiar characteristic, and so has all the Roe material labelled as A. brevicornis. It would seem that all the Irish material of A. brevicornis and mixta belong to the same species, but the correct name is still to be resolved.

Ameiropsis nobilis G.O.Sars
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine. In NMI there is a single specimen from Kilkieran Bay, collected 19.v.1980, by D.McGrath. In many ways it resembles A. nobilis, as described and figured by Sars, but differs in a number of important details. It may be the same as the form recorded by Farran (1913), but this cannot be confirmed.

Interleptomesochra attenuata (A.Scott)
(= Leptomesochra attenuata (A.Scott))
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral sand.

Nitocra affinis Gurney
Dublin: Dalkey (Roe, 1958).
Marine, littoral sand.

Nitocra hibernica (Brady)
(= Canthocamptus hibernicus Brady)

Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Dublin: Royal Canal at Dublin (Brady, 1880).
Kildare: Straffan (Frost, 1942).
Laois: Fisherstown (McCall, 1983).
Mayo: near Newport (Brady, 1880); Clew Bay area (Scourfield, 1912).
Sligo: L.Arrow (Gurney, 1932).
Freshwater. First described from Ireland (Brady, 1880).

Nitocra pusilla G.O.Sars
Dublin: Dalkey (Roe, 1958).
Marine, amongst algae.

Nitocra spinipes Boeck
(= Nitocra parafragilis Roe)
Cork: L.Hyne, W092289, littoral, 28.vii.1989, J.M.C.H. (NMI).
Dublin: Malahide Estuary (Gurney, 1921); Dalkey (Roe, 1958); R.Dodder (O'Riordan, 1971a).
Mayo: Clare I. (Scourfield, 1912).
Wexford: Ballyteige, S935065, light-trap, 1m, 6.vi.1988, J.M.C.H. (NMI).
Brackish. Light-trap.

Nitocra typica Boeck
(= Ameira amphibia Brady)
Cork: L.Hyne (Roe, 1960); The Goleen, L.Hyne, W096277, peaty mud, 12.viii.1989, J.M.C.H. (NMI).
Down: Newcastle (Brady, 1902).
Dublin: Malahide Estuary (Gurney, 1921); Dalkey (Roe, 1958); Blackrock area (Murphy and Holmes, 1990).
Galway: Silver Strand, and Carna (Bodin and Jackson, 1989).
Mayo: Clare I. (Southern, 1915).
Marine and brackish. Sand.

Proameira hiddensoeensis (Schäfer)
Dublin: Dalkey (Roe, 1958).
Marine, laminarian holdfasts.

Proameira psammophila Wells
Down: Strangford (Wells, 1963).
Marine. First described from Strangford Harbour (Wells, 1963).

*Pseudameira breviseta Klie
Dublin: Dalkey I., O2726, laminarian holdfast, 29.v.1952, K.M.Roe (NMI).
Marine.

Pseudameira reducta Klie
Down: Strangford L. (Wells, 1963).
Marine.

Psyllocamptus propinquus (T.Scott)
Dublin: Dalkey (Roe, 1958).
Marine, amongst littoral algae.

Sarsameira longiremis (T.Scott)
Cork: L.Hyne (Holmes, 1985).
Marine. Light-trap.

Sicameira leptoderma Klie
(= Ameira leptoderma (Klie))
Down: Strangford (Wells, 1963).
Marine.

Stenocopia longicaudata (T.Scott)
Galway: Ballynakill Harbour (Farran, 1913); Kilkieran Bay, Pseudocucumas ground, 20.v.1979, D.McGrath (NMI); Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).

Marine, sublittoral mud.

Stenocopia spinosa (T.Scott)
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral sand.

Family PARAMESOCHRIDAE

Diarthrodella parorbiculata Wells
Cork: Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI).
Down: Strangford L. (Wells, 1963).
Marine. First described from Rock Angus, Strangford L. (Wells, 1963).

Kliopsyllus constrictus (Nicholls)
Galway: Silver Strand, and Carna (Bodin and Jackson, 1989).
Marine.

Kliopsyllus perharidiensis (Wells)
(= Paramesochra perharidiensis Wells)
Down: Strangford (Wells, 1963).
Marine.

Leptopsyllus celticus Bodin and Jackson
Galway: Mweenish I., Carna (Bodin and Jackson, 1987, 1989).
Marine. Mid-shore sand. Known only from Co.Galway and from Brittany (Bodin and Jackson, 1987). Paratypes in NMI.

Paramesochra dubia T.Scott
Down: Strangford L. (Wells, 1963).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral sand.

*Scottopsyllus herdmani (I.C.Thompson and A.Scott)
Dublin: Seapoint, O227291, intertidal coarse gravel, 1.vii.1989, J.M.C.H. (NMI).
Marine, interstitial.

Family TETRAGONICIPITIDAE

Phyllopodopsyllus bradyi (T.Scott)
Cork: L.Hyne (Holmes, 1987).
Down: Strangford L. (Wells, 1963).
Dublin: Malahide, and Dalkey (O'Riordan, 1971b).
Marine, sublittoral sand.

Phyllopodopsyllus hardingi (Roe)
(= Paraphyllopodopsyllus hardingi Roe)
Cork: L.Hyne (Roe, 1960).
Dublin: Dalkey (Roe, 1955, 1958).
Marine, rock pool algae.

Phyllopodopsyllus hibernicus (Roe)
(= Paraphyllopodopsyllus hibernicus Roe)
Cork: L.Hyne (Roe, 1960).
Dublin: Dalkey (Roe, 1955, 1958).
Marine, rock pool algae.

Pteropsyllus consimilis (T.Scott)
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral sand.

Tetragoniceps malleolatus Brady
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral.

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Family CANTHOCAMPTIDAE

Attheyella crassa (G.O.Sars)
(= Canthocamptus crassus G.O.Sars)
Cavan: near Grover, L.Sheelin (O'Riordan, 1971a).
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Galway: Ballynahinch (Popple, 1912).
Kerry: near Killorglin (O'Riordan, 1971a)
Kildare: Straffan (Frost, 1942); Celbridge (O'Riordan, 1971a).
Laois: Co.Laois (McCall, 1983).
Mayo: Clare I., and Castlebar Lough (Scourfield, 1912); Glenamoy Bog (McCall, 1975).
Monaghan: Bragan (Popple, 1912).
Sligo: L.Arrow (Gurney, 1932).
Wicklow: Ballysmuttan (Frost, 1942); Avoca (O'Riordan, 1971a).
Widespread in freshwater. Records of Mesochra robertsoni Brady (Brady, 1880) from L.Enask and L.Arddery, Co.Galway, and from Newport, Co.Mayo may refer to this species, but could equally apply to Bryocamptus pygmaeus.

Attheyella dentata (Poggenpol)
(= Canthocamptus dentatus Poggenpol)
Galway: Kylemore L. (Popple, 1912, as C. horridus Fischer).
Monaghan: Cornacassa (Popple, 1912, as C. horridus).
Wicklow: Devil's Glen (O'Riordan, 1971a).
Freshwater.

Attheyella trispinosus (Brady)
(= Canthocamptus trispinosus Brady)
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Cork: Schull (O'Riordan, 1971a).
Dublin: Royal Canal, Ashtown (Holmes, 1984).

Freshwater.

Bryocamptus minutus (Claus)
(= Canthocamptus minutus Claus)
(= Canthocamptus lucidulus Rehberg)
Dublin: Malahide (Gurney, 1921).
Kildare: Straffan (Frost, 1942).
Mayo: Castlebar Lough (Scourfield, 1912).
Monaghan: Bragan (Popple, 1912).
Freshwater.

Bryocamptus praegeri (Scourfield)
(= Canthocamptus praegeri Scourfield)
Kildare: Straffan (Frost, 1942).
Mayo: Clare I. (Scourfield, 1912).
Wicklow: Ballysmuttan (Frost, 1942).
Freshwater. First described from Clare I., in wet moss (Scourfield, 1912).

Bryocamptus pygmaeus (G.O.Sars)
(= Canthocamptus pygmaeus G.O.Sars)
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926)
Cork: Bandon Wood, W468547, leaf litter, 25.xii.1980, J.Good (NMI).
Donegal: Gweedore-Gortahork Rd. (O'Riordan, 1971a).
Dublin: Malahide, and Howth (Gurney, 1921); Shanganagh R. at Killiney Beach (O'Riordan, 1971a); Royal Canal, Ashtown (Holmes, 1984) Kilmashogue, 01-2-, 1924, A.W.Stelfox (NMI).
Galway: L.Kylemore, and Ballynahinch (Popple, 1912); Derryrush (O'Riordan, 1971a).
Kerry: Killorglin, and Killarney (O'Riordan, 1971a).
Kildare: Bog of Allen at Newbridge (Gurney, 1921); Straffan (Frost, 1942).

Laois: Co.Laois (McCall, 1983).
Mayo: Clare I., and Clew Bay area (Scourfield, 1912); Glenamoy Bog (McCall, 1975).
Monaghan: Cornacassa, Rossmore, and Bragan (Popple, 1912).
Wicklow: Ballysmuttan (Frost, 1942); near Roundwood, T213992, Sphagnum, 9.i.1988, J.M.C.H. (NMI); Calary, O224121, Sphagnum, 24.i.1988, J.M.C.H.; Blackditch Wood, the Murrough, O3003, leaf-litter, 2.ii.1989, R.E.Blackith (NMI); near Kippure, O059148, gravel in stream, 12.ii.1989, J.M.C.H.
Freshwater. Wet moss. Probably the most widespread and abundant species in Ireland.

Bryocamptus weberi (Kessler)
(= Canthocamptus weberi Kessler)
Clare/Galway/Tipperary: near L.Derg (Gurney, 1932).
Wicklow: Ballysmuttan (Frost, 1942); near Roundwood, T213992, Sphagnum, 9.i.1988, J.M.C.H. (NMI).
Freshwater, wet moss. The L.Derg mentioned by Gurney (1932) is not the one in Co.Donegal.

Bryocamptus zschokkei (Schmeil)
(= Canthocamptus zschokkei Schmeil)
Galway: R.Corrib (O'Riordan, 1971a).
Kerry: R.Laune, near Killorglin (O'Riordan, 1971a); Conair Pass, Dingle, Q4905, wet moss, 2.vi.1989, J.M.C.H. (NMI).
Kildare: Straffan (Frost, 1942).
Mayo: Clare I., Croaghpatrick, and near Roonah L. (Scourfield, 1912); Westport (O'Riordan, 1971a); Glenamoy Bog (McCall, 1975).
Sligo: near L.Arrow (Gurney, 1932).
Wicklow: Ballysmuttan (Frost, 1942); near Roundwood, T213992, Sphagnum, 9.i.1988, J.M.C.H. (NMI); Avonmore R., Avondale, T202856, submerged moss and gravel, 15.v.1988, 6.v.1989, J.M.C.H. (NMI).

Freshwater.

Canthocamptus microstaphylinus Wolf
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Mayo: turlough near Balla, M250813, 16.iii.1987, J.M.C.H. (NMI); turlough near Ballinrobe, M277648, 16.iii.1987, J.M.C.H. (NMI).
Sligo: L.Arrow (Gurney, 1932).
Westmeath: L.Derravaragh (O'Riordan, 1971a).
Freshwater.

Canthocamptus staphylinus (Jurine)
Antrim: "Cranmore", Belfast (W.Thompson, 1856, as Cyclopsina staphylinus Edwards, probably this species.
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Donegal: Redcastle R., Moville (O'Riordan, 1971a).
Dublin: Mount Argus (O'Riordan, 1971a); Royal Canal, Ashtown (Holmes, 1984); Raheny Quarries, O2-3-, 30.xii.1923, E.O'Mahony (NMI); Phoenix Park, O104365, oval pond, 31.i.1964, J.D.Reynolds (NMI).
Galway: L.Kylemore (Popple, 1912, as C. minutus Müller, probably this species); Gort (O'Riordan, 1971a).
Galway/Mayo: Galway and Mayo area (Scourfield, 1912, as C. minutus Müller, probably this species).
Kerry: near Killorglin, and Waterville (O'Riordan, 1971a).
Kildare: Straffan (Frost, 1942); Pollardstown Fen, N764169, 9.iv.1989, J.M.C.H. (NMI).
Laois: Co.Laois (McCall, 1983).
Monaghan: Drumreaske (Kane, 1907); Rossmore (Popple, 1912, as C. minutus Müller, probably this species).
Wicklow: King's R., and Glendalough (O'Riordan, 1971a); Dowry Mountain, O0318, 2.ii.1924, A.W.Stelfox (NMI); the Murrough,

O321028, 14.vi.1986, C.Duigan; Calary, O224121, bog pools, 24.i.1988, J.M.C.H. (NMI).
Freshwater, free-swimming in open water in small pools. The record by William Thompson (1856) constitutes the earliest mention of a recognisable species of harpacticoid in Ireland.

Elaphoidella gracilis (G.O.Sars)
(= Canthocamptus gracilis G.O.Sars)
Clare/Galway/Tipperary: L.Derg and R.Shannon (Southern and Gardiner, 1926).
Kildare: Straffan (Frost, 1942).
Monaghan: Rossmore (Popple, 1912).
Freshwater.

Epactophanes richardi Mrázek
(= Epactophanes muscicolus (Richters)
Donegal: Pettigo, near L.Derg (Gurney, 1932).
Sligo: Hollybrook demsne, near Boyle (Gurney, 1932).
Freshwater.

Itunella muelleri (Gagern)
Cork: L.Hyne (Holmes, 1985).
Dublin: Dalkey (Roe, 1958); N.Bull (Healy, 1975).
Galway: Grattan Road Strand, Silver Strand, and Carna (Bodin and Jackson, 1989).
Mayo: Carramore Strand, near Louisburgh, L795817, cast-up seaweed, 27.viii.1987, J.M.C.H. (NMI).
Marine. Light-trap. The relationship between this species and I. tenuiremis (T.Scott) is a matter for conjecture. The difference (Lang, 1948) is supposed to be found in the shape of the caudal rami, eliptical or rectangular, a feature which probably has more to do with the pressure of a coverslip than any real morphological difference.

*Maraenobiotus vejdovskyi Mrázek subsp. truncatus Gurney
Wicklow: Glen-of-the-Downs, O261113, wet oak and beech leaf-litter, 16.iv.1988, J.M.C.H. (NMI).
Freshwater, damp moss and leaf litter.

Mesochra heldti Monard
Cork: The Goleen, L.Hyne, W096277, peaty mud, 12.viii.1989, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958, as M. rapiens (Schmeil), also as M. armoricana Monard (NMI); N.Bull (O'Riordan, 1971b, also as M. aestuarii Monard (NMI)).
Marine and brackish. Unnecessary difficulties have been caused with the identification of this species, partly due to Monard's habit of describing the legs in the wrong order, resulting in errors in the keys by Lang (1948) and Hamond (1971).

*Mesochra inconspicua (T.Scott)
Dublin: Seapoint, O227291, intertidal coarse gravel, 1.vii.1989, J.M.C.H. (NMI).
Marine, interstitial.

Mesochra lilljeborgi Boeck
Cork: L.Hyne (Holmes, 1985).
Down: Dundrum (Brady, 1902).
Dublin: Malahide (Gurney, 1921); Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971a, 1971b); N.Bull Wall, O212360, muddy sand, 2.i.1989, J.M.C.H. (NMI).
Galway: near Clifden (Brady, 1880).
Kerry: Killorglin (O'Riordan, 1971a).
Mayo: Westport Bay (Brady and Robertson, 1873; Brady, 1880).
Wexford: Ballyteige, S935065, light-trap, 1m, 6.vi.1988, J.M.C.H. (NMI).
Brackish, mudflats and saltmarshes. Light-trap.

Mesochra pygmaea (Claus)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958); Broadmeadows, Malahide, O224468, light-trap, 2m, mud, 23.ix.1984, J.M.C.H.
Galway: Grattan Road Strand, and Carna (Bodin and Jackson, 1989).
Mayo: Blacksod Bay (Farran, 1913)
Marine, sand and amongst algae. Light-trap.

Mesochra rapiens (Schmeil)
(= Canthocamptus hirticornis T.Scott)
Dublin: Malahide Estuary (Gurney, 1921).
Fermanagh: L.Erne (Gurney, 1932).
Mayo: Clare I. (Scourfield, 1912).
Wicklow: The Murrough, O321028, 14.vi.1986, C.Duigan (NMI).
Brackish.

Moraria brevipes (G.O.Sars)
Donegal: Pettigo (Gurney, 1932).
Dublin: Howth (Gurney, 1921).
Kildare: Bog of Allen at Newbridge (Gurney, 1921); Straffan (Frost, 1942).
Laois: Slieve Bloom (McCall, 1983).
Mayo: Glenamoy Bog (McCall, 1975).
Roscommon/Sligo: near Boyle (Gurney, 1932).
Wicklow: Ballysmuttan (Frost, 1942).
Freshwater.

Moraria poppei (Mrázek)
Donegal: Pettigo (Gurney, 1932).
Kildare: Straffan (Frost, 1942).
Freshwater, damp moss.

Moraria sphagnicola Gurney
Donegal: Pettigo (Gurney, 1932).
Laois: Slieve Bloom (McCall, 1983).
Mayo: Glenamoy Bog (McCall, 1975).
Roscommon/Sligo: near Boyle (Gurney, 1932).
Wicklow: Ballysmuttan (Frost, 1942); near Roundwood, T213992, Sphagnum, 9.i.1988, J.M.C.H. (NMI); Calary, O224121, Sphagnum, 24.1.1988, J.M.C.H. (NMI).
Freshwater, wet Sphagnum.

Moraria varica (Graeter)
Donegal: near Pettigo (Gurney, 1932).
Dublin: Malahide (Gurney, 1921).
Wicklow: Glen-of-the-Downs, O261113, leaf-litter, 16.iv.1988, J.M.C.H. (NMI).
Freshwater, wet leaf litter and moss, and rot holes in trees.

Nannomesochra arupinensis (Brian)
Cork: L.Hyne (Roe, 1960); S.shore, L.Hyne, W097280, algae, 15.viii.1988, J.M.C.H. (NMI).
Marine.

Orthopsyllus linearis (Claus)
(= Cletodes linearis (Claus))
Cork: L.Hyne (Roe, 1960, as O. agnatus Klie); L.Hyne, W097280, algae and sponges, 13.viii.1989, J.M.C.H.
Dublin: Dalkey (Roe, 1958, as O. agnatus).
Galway: Roundstone Bay (Brady, 1880); Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI), Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Kerry: Templenoe, Kenmare Bay (Herdman, 1891).
Mayo: Westport Bay (Brady and Robertson, 1873).
Marine, with weed and sponges. The intricate taxonomy of the genus Orthopsyllus was commented on by Lang (1965) and Hamond

(1970), among others. Here, following the suggestion by Wells (1968) that the genus is composed of a single highly-variable world-wide species, all records are given under the one name. Material from the west coast of Ireland corresponds most closely to the Cletodes linearis of Brady (1880), but not so closely to that of Sars (1909).

Paracamptus schmeilii (Mrázek)
(= Canthocamptus schmeilii Mrázek)
Kildare: Straffan (Frost, 1942).
Freshwater.

Family CYLINDROPSYLLIDAE

Arenocaris sp.
Galway: Silver Strand, and Carna (Bodin and Jackson, 1989).
Marine.

Cylindropsyllus laevis Brady
Down: Strangford L. (Wells, 1963).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, interstitial.

Cylindropsyllus remanei Kunz
Down: Strangford (Wells, 1963).
Marine, interstitial.

Evansula pygmaea (T.Scott)
Galway: Silver Strand (Bodin and Jackson, 1989).
Marine.

Leptastacus laticaudatus Nicholls
Down: Strangford L. (Wells, 1963, as subsp. intermedius Kunz).
Galway: Silver Strand (Bodin and Jackson, 1989).

Marine.

Leptastacus macronyx (T.Scott)
Down: Strangford L. (Wells, 1963).
Marine, sublittoral.

Leptopontia curvicauda T.Scott
Galway: Silver Strand (Bodin and Jackson, 1989).
Marine.

Paraleptastacus espinulatus Nicholls
Down: Strangford L. (Wells, 1963).
Galway: Grattan Road Strand, Silver Strand, and Carna (Bodin and Jackson, 1989).
Marine.

Psammastacus sp.
Galway: Silver Strand (Bodin and Jackson, 1989).
Marine.

Family CLETODIDAE

Cletodes limicola Brady
Kerry: Templenoe, Kenmare Bay (Herdman, 1891).
Mayo: Westport Bay (Brady and Robertson, 1873).
Marine, sublittoral mud.

Cletodes tenuipes T.Scott
Cork: L.Hyne (Roe, 1960).
Dublin: Dalkey I., O2726, stone washing, 15.ii.1952, K.M.Roe (NMI).
Mayo: Inishgowla Harbour, Clew Bay (Farran, 1913).
Marine, sublittoral.

Enhydrosoma buchholtzi (Boeck)
Dublin: N.Bull (O'Riordan, 1971b); Malahide (O'Riordan, 1971b, as E. propinquum (NMI)).
Marine, mud.

Enhydrosoma curticauda Boeck
Galway: Ballynakill (Farran, 1913, as E. curticaudatum).
Marine, mud.

Enhydrosoma garienis Gurney
Cork: Ballylickey Bridge (O'Riordan, 1971b, also as E. propinquum (NMI)).
Dublin: Malahide and Clontarf (O'Riordan, 1971b); N.Bull Wall, O212360, mud, 2.i.1989, J.M.C.H. (NMI).
Marine and brackish, shallow water mud.

Enhydrosoma longifurcatum G.O.Sars
Cork: L.Hyne (Roe, 1960); Ballydehob (O'Riordan, 1971b); The Goleen, L.Hyne, W096277, mud, 10.viii.1989, J.M.C.H. (NMI).
Dublin: Liffey Estuary (O'Riordan, 1971b).
Marine, sublittoral mud.

Enhydrosoma propinquum (Brady)
(= Cletodes propinqua Brady)
Cork: L.Hyne (Holmes, 1985).
Dublin: Dublin Bay area (O'Riordan, 1971b).
Galway: Grattan Road Strand (Bodin and Jackson, 1989).
Mayo: Clew Bay (Brady, 1880); Feorinyeeo Bay, Blacksod Bay (Farran, 1913).
Marine, mud. Light-trap.

Enhydrosoma sordidum Monard
Dublin: Clontarf (O'Riordan, 1971b).
Marine. O'Riordan (1971b) expressed doubts about the correct

identification of his material from Clontarf. There is no reference material in NMI and the species has not been seen since.

Eurycletodes irelandica Roe
Cork: L.Hyne (Roe, 1960 (NMI)).
Dublin: Dalkey (Roe, 1958, as E. (Oligocletodes) sp. (NMI)).
Marine. First described, as E. (Oligocletodes) sp., from Dalkey (Roe, 1958). First named from L.Hyne (Roe, 1960). Marine, littoral rock pools.

Eurycletodes similis (T.Scott)
Cork: L.Hyne (Roe, 1960); S.shore, L.Hyne, W097280, algae, vii.1988, J.M.C.H.(NMI).
Dublin: Dalkey (Roe, 1958).
Galway: Ballynakill (Farran, 1913).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Mayo: Elly Bay, Blacksod Bay (Farran, 1913, 1915).
Marine.

Nannopus palustris Brady
Cork: Ballydehob (O'Riordan, 1971b).
Dublin: Malahide, and N.Bull (O'Riordan, 1971b); N.Bull Wall, O212360, muddy sand, 15.iv.1989, J.M.C.H. (NMI).
Meath: Mornington (O'Riordan, 1971b).
Marine and brackish, littoral mud.

Rhizothrix curvata Brady and Robertson
(= Enhydrosoma curvatum (Brady and Robertson))
Donegal: L.Swilly (Brady, 1880).
Dublin: Dublin Bay area, and Dalkey (O'Riordan, 1971b).
Mayo: Inishgowla Harbour, Clew Bay (Farran, 1913).
Marine, sublittoral mud and sand.

Rhizothrix minuta (T.Scott)
Dublin: Seapoint, and Shanganagh (O'Riordan, 1971b).
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Marine, sand and mud.

Rhizothrix reducta Noodt
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).
Marine.

Family LAOPHONTIDAE

Asellopsis hispida Brady and Robertson
(= Laophonte hispida (Brady and Robertson))
Cork: L.Hyne (Holmes, 1985); Sherkin I., W008259, W014259, light-trap, 3.viii.1987, J.M.C.H. (NMI).
Down: Strangford L. (Wells, 1963).
Dublin: Dalkey (O'Riordan, 1966).
Kerry: Valentia Harbour (I.C.Thompson, 1897).
Mayo: Westport Bay (Brady and Robertson, 1873); Clew Bay (Farran, 1913).
Marine. Light-trap. First described from Westport Bay (Brady and Robertson, 1873; Farran, 1913).

Asellopsis intermedia (T.Scott)
Down: Strangford (Wells, 1963).
Dublin: Baldoyle, Dublin Bay area, Killiney Bay, and Shanganagh (O'Riordan, 1971b); Booterstown Strand, O2030, muddy sand, 17.xii.1987, R.Hollinshead (NMI); Skerries, O259608, mid-shore sand, 29.xii.1987, J.M.C.H. (NMI); N.Bull Wall, O212360, sand, 2.i.1989, J.M.C.H. (NMI).
Galway: Grattan Road Strand, and Silver Strand (Bodin and Jackson, 1989).

Marine, littoral mud and sand.

Echinolaophonte horrida (Norman)
(= Laophonte horrida (Norman))
(= Onychocamptus horridus (Norman))
Donegal: Mulroy Lough (Brady, 1880).
Dublin: Dalkey (Roe, 1958).
Galway: Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).
Mayo: Inishgowla, Clew Bay (Farran, 1913).
Marine, amongst algae.

Esola bulligera (Farran)
(= Laophonte bulligera Farran)
Mayo: Blacksod Bay (Farran, 1913).
Marine, sublittoral. First described from Blacksod Bay (Farran, 1913).

Esola longicauda Edwards var. bulbifera Norman
(= Laophonte bulbifera Norman)
Cork: N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI).
Galway: Ballynakill (Farran, 1913); Salt Lake, Clifden, L6649, Serpula reef, vii.1980, B.O'Connor (NMI).
Mayo: Blacksod Bay (Farran, 1913).
Marine. Light-trap. All Irish specimens so far match the var. bulbifera of Norman.

Harrietella simulans (T.Scott)
Down: Strangford L. (Holmes and Jeal, 1987).
Marine, associated with gribble (L. lignorum). Light-trap.

Heterolaophonte brevipes Roe
Cork: L.Hyne (Roe, 1960).

Dublin: Dalkey (Roe, 1958).
Marine, littoral, ranging from the laminarian zone to washings from Lichina. First described from Dalkey I. and the Muglins (Roe, 1958).

Heterolaophonte denticulata Roe
Cork: L.Hyne (Roe, 1960).
Dublin: Dalkey (Roe, 1958).
Marine, same habitats as for the above species, H. brevipes, and similarly first described from Dalkey I. and the Muglins (Roe, 1958). The two were often found together, and their specific distinctness is suspect. The only consistent difference is in the number of articles in the leg 1 exopod; two in brevipes, and three in denticulata.

Heterolaophonte hamondi Hicks
Dublin: Blackrock area (Murphy and Holmes, 1990).
Marine.

Heterolaophonte littoralis (T.Scott and A.Scott)
(= Laophonte littoralis T.Scott and A.Scott)
Dublin: Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971b; Healy, 1975); N.Bull Wall, O212360, muddy sand, 15.iv.1989, J.M.C.H. (NMI); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, littoral. Farran's and Southern's records are uncertain as they may have included H. longisetigera (Klie) which was then unrecognised. Both species were found to occur together at Sandycove. Most of the Roe specimens in NMI labelled H. littoralis are H. longisetigera, but some from Dalkey Island, 3.xi.1952, are confirmed as correct.

*Heterolaophonte longisetigera (Klie)
Cork: L.Hyne (Roe, 1960, as H. littoralis, (NMI)); N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958, as H. littoralis, (NMI)); Dunlaoghaire (O'Riordan, 1971b, as H. littoralis, (NMI)); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Marine, littoral. Formerly a subspecies of H. littoralis, with which it co-exists amongst weed in rock pools.

Heterolaophonte minuta (Boeck)
(= Laophonte subsalsa Brady)
Donegal: Glen Estuary (Brady, 1902).
Down: Dundrum (Brady, 1902).
Dublin: N.Bull (O'Riordan, 1971b); Blackrock, O221394, 29.vi.1965, C.E.O'Riordan (NMI).
Brackish, sand and mud. Characteristic estuarine species.

*Heterolaophonte norvegica Drzycimski
Cork: L.Hyne (Roe, 1960, figs. 35-44, as Heterolaophonte sp. (NMI)).
Dublin: Dalkey I., O278262, stone scraping, Pelvetia and Fucus serratus zone, 24.xi.1952, K.M.Roe (NMI).
Marine.

Heterolaophonte stroemi (Baird)
(= Laophonte strömi (Baird))
Antrim: Larne Lough (Pearson, 1905, as Laophonte curticauda Boeck).
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985); Carrigathorna, near L.Hyne (Goss-Custard et al., 1979).
Dublin: Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971b); Sandycove, O260280, rock-pools, 25.ii.1989, J.M.C.H. (NMI); Seapoint, O227291, 1.vii.1989, J.M.C.H.
Galway: Clifden and Roundstone (Brady, 1880, as L.

curticauda); Killeany Bay (Herdman, 1891, as L. curticauda); Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Kerry: Valentia (I.C.Thompson, 1896, as L. curticauda).
Mayo: Westport Bay (Brady, 1880, as L. curticauda); Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, intertidal on rocky shores. Light-trap. A female variety, in which the leg 5 exopod is elongated in a characteristic way, occurred occasionally viz. The Muglins and Dalkey I., 1952, Roe Collection (NMI); Sandycove, L.Hyne, and Corranroo Bay, J.M.C.H. (NMI).

*Heterolaophonte uncinata (Czerniavski)
Cork: L.Hyne (Roe, 1960, as H. strömi, var. brevicaudata Monard); The Goleen, L.Hyne, W095278, 22.ix.1987, J.M.C.H. (NMI); S.shore, L.Hyne, W097280, mud, 3.viii.1989, J.M.C.H. (NMI).
Dublin: Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Marine.

Laophonte baltica Klie
Cork: L.Hyne (Roe, 1960).
Marine.

Laophonte cornuta Philippi
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1983); Carrigathorna, near L.Hyne (Goss-Custard et al., 1979).
Donegal: Mulroy Bay (Brady, 1880, as L. serrata Claus).
Dublin: Dalkey (Roe, 1958); Dublin Bay, O283274, 12.5m, sand, 31.iii.1982, J.G.Wilson; Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Galway: Roundstone (Brady, 1880, as L. serrata); Ballynakill (Farran, 1913); Kilkieran Bay, Pseudocucumas ground, 3.iii.1978, D.McGrath (NMI); Salt Lake, Clifden, L6649,

Serpula reef, vii.1980, B.O'Connor (NMI); Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Kerry: Ventry Bay (Brady, 1880, as L. serrata).
Mayo: Clew Bay (Brady, 1880, as L. serrata); Inishlyre Harbour, Clew Bay (Farran, 1913); Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Marine, amongst algae. Light-trap.

Laophonte denticornis T.Scott
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, sublittoral.

Laophonte elongata Boeck
Cork: L.Hyne (Roe, 1960); Barloge, near L.Hyne, W100279, coarse gravel, 24.vii.1986, J.M.C.H. (NMI); S.shore, L.Hyne, W097280, algae, 15.viii.1988, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Marine, amongst algae.

Laophonte farrani Roe
Dublin: Dalkey (Roe, 1958).
Marine. First described from a small number (13) of specimens collected in 1952 on Dalkey I. and the Muglins (Roe, 1958). Two specimens, male and female, on slides (Roe Collection, NMI) were re-examined and found to differ in a number of ways from the original description; for example, the male leg 3 endopod article 3 bears four setae, instead of the three illustrated by Roe, and the male leg 4 exopod bears three "antler-like" spines, instead of the two illustrated. The species will not key out correctly in the tabular keys of Wells (1976). A re-description is desirable if and when fresh material becomes available.

Laophonte inopinata T.Scott
Cork: L.Hyne (Roe, 1960).
Dublin: Dalkey (Roe, 1958).
Marine.

*Laophonte inornata A.Scott
Cork: L.Hyne (Roe, 1960, as L. serrata, (NMI)); N.Quay, L.Hyne, W094288, 5m, mud, 3.viii.1989, J.M.C.H. (NMI).
Marine.

Laophonte longicaudata Boeck
Cork: L.Hyne (Holmes, 1985).
Galway/Mayo: off Killary Harbour (Farran, 1913).
Kerry: Ventry Bay (Brady, 1880); Templenoe, Kenmare Bay (Herdman, 1891, as L. longicauda).
Marine, amongst algae. Light-trap.

Laophonte serrata (Claus)
Dublin: Dalkey (Roe, 1958).
Mayo: Clew Bay (Farran, 1913); Clare I. (Southern, 1915); Blacksod Bay (Farran, 1915).
Marine.

Laophonte setosa Boeck
(= Laophonte similis (Claus))
Clare: Great Isle of Aran (Brady and Robertson, 1873).
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Down: Kilclief (Williams, 1954).
Dublin: Dalkey (Roe, 1958); Sandycove, O 260280, rock-pools, 25.ii.1989, J.M.C.H. (NMI); Seapoint, O227291, 1.vii.1989, J.M.C.H.
Galway: Clifden and Roundstone Bays (Brady and Robertson, 1873); Killeany Bay (Herdman, 1891).
Kerry: Ventry Bay (Brady and Robertson, 1873).

Mayo: Westport Bay (Brady and Robertson, 1873); Clew Bay and Blacksod Bay (Farran, 1913); Clare I. (Southern, 1915).
Wexford: Ballyteige, S935065, light-trap, 1m, 6.vi.1989, J.M.C.H. (NMI).
Marine, amongst algae. Light-trap.

Laophonte thoracica Boeck
Dublin: Dalkey (Roe, 1958).
Mayo: Inishlyre Harbour, Clew Bay (Farran, 1913).
Marine, amongst algae.

Laophontopsis lamellifera (Claus)
(= Cleta lamellifera Claus)
(= Laophonte lamellifera (Claus))
Cork: N.Quay, L.Hyne, W094288, light-trap, 5m, 23.ix.1987, J.M.C.H. (NMI); L.Hyne, W0928, mud, 3.viii.1989, J.M.C.H. (NMI).
Donegal: L.Swilly (Brady, 1880).
Down: Ringhaddy, Strangford L. (Williams, 1954).
Dublin: Dalkey (O'Riordan, 1966, 1971b); Dunlaoghaire (O'Riordan, 1971b); Portmarnock, O2-4-, sand, iii.1955, F.O'Gorman (NMI).
Galway: Ballynakill (Farran, 1913).
Kerry: Ventry Bay (Brady, 1880).
Waterford: Dunmore East, S689007, light-trap, 5m, 23.vi.1983, J.M.C.H. (NMI).
Marine, mud. Light-trap.

Normanella minuta (Boeck)
(?= Normanella dubia Brady and Robertson)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).
Dublin: Dalkey (Roe, 1958).
Mayo: Clew Bay (Brady, 1880; Farran, 1913).
Marine, amongst algae. Light-trap. The relationship between N.

minuta and N. dubia is unclear. If they are synonyms, as considered by Sars (1909), then the species is widely distributed from Norway to the British Isles. Lang (1948) considered N. dubia as "Species incerta". However, all material in NMI closely resembles N. dubia and differs in a number of respects from the N. minuta as described by Sars. In all probability, N. dubia will turn out to be a distinct species and the predominant Normanella form around Ireland.

Normanella mucronata G.O.Sars
Cork: L.Hyne (Holmes, 1985).
Marine. Light-trap.

Paralaophonte brevirostris (Claus)
(= Laophonte brevirostris (Claus))
Cork: L.Hyne (Roe, 1960; Sloane et al. 1961; Holmes, 1985).
Down: Killard (Williams, 1954).
Dublin: Dalkey (Roe, 1958).
Galway: Kilkieran Bay, Pseudocucumas ground, 3.iii.1978, D.McGrath (NMI).
Mayo: Blacksod Bay, and Inishlyre Harbour, Clew Bay (Farran, 1913).
Marine. Light-trap.

Paralaophonte congenera (G.O.Sars)
(= Laophonte congenera G.O.Sars)
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1985).
Dublin: Dalkey (Roe, 1958); Merrion Strand (O'Riordan, 1971b); Sandycove, 0260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI).
Galway: Ballynakill (Farran, 1913).
Marine. Light-trap.

Paronychocamptus curticaudatus (Boeck)
Cork: L.Hyne (Roe, 1960; Holmes, 1985).

Dublin: Dalkey (Roe, 1958); Dublin Bay area (O'Riordan, 1971b); Malahide Estuary, O234483, mud, 5.xi.1987, J.M.C.H. (NMI); N.Bull Wall, O212360, muddy sand, 2.i.1989, 15.iv.1989, J.M.C.H. (NMI); Sandycove, O260280, rock-pool, 25.ii.1989, J.M.C.H. (NMI); Seapoint, O227291, 1.vii.1989, J.M.C.H.
Marine. Light-trap.

Paronychocamptus nanus (G.O.Sars)
Cork: Ballylickey Bridge (O'Riordan, 1971b).
Dublin: Malahide (O'Riordan, 1971b).
Marine, mud.

Platychelipus littoralis Brady
Cork: Ballydehob (O'Riordan, 1971b).
Dublin: Dublin Bay area (O'Riordan, 1971b); Malahide Estuary, O234483, mud, 5.xi.1987, J.M.C.H. (NMI).
Meath: Mornington (O'Riordan, 1971b).
Brackish, mud and sand.

Pseudolaophonte spinosa (I.C.Thompson)
Down: Strangford L. (Wells, 1963).
Marine, sublittoral sand.

Pseudonychocamptus koreni (Boeck)
(= Laophonte koreni Boeck)
Cork: L.Hyne (Roe, 1960); N.shore, L.Hyne, W092289, 28.vii.1989, J.M.C.H. (NMI).
Dublin: Dalkey (Roe, 1958); Blackrock area (Murphy and Holmes, 1990).
Galway: Corranroo Bay, M323115, 16.iii.1987, J.M.C.H. (NMI).
Mayo: Clew Bay and Blacksod Bay (Farran, 1913).
Marine and brackish, amongst algae and sand.

Pseudonychocamptus proximus (G.O.Sars)
Dublin: Dalkey (Roe, 1958); N.Bull (O'Riordan, 1971b, as P. koreni (NMI)).
Marine.

Family ANCHORABOLIDAE

Laophontodes bicornis A.Scott
Cork: L.Hyne (Roe, 1960; Sloane et al., 1961; Holmes, 1983).
Down: Strangford L. (Wells, 1963).
Dublin: Dalkey (Roe, 1958).
Galway: Ballynakill (Farran, 1913); Kilkieran Bay, Pseudocucumas ground, 3.iii.1978, D.McGrath (NMI).
Mayo: Inishlyre Roads, Clew Bay, and Blacksod Bay (Farran, 1913).
Marine. Light-trap.

*Laophontodes expansus G.O.Sars
Dublin: Dalkey (Roe, 1958, as Laophontodes sp.).
Marine. Roe (1958) expressed some misgivings about the identity of the single female specimen found in a rock pool on the Muglins. However, the differences between her specimen (NMI) and the description of L. expansus by Sars (1908) are trivial, and there is no doubt about its correct identity.

Laophontodes typicus T.Scott
Dublin: Dalkey (Roe, 1958).
Marine, laminarian holdfasts.

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Bull. Ir. biogeog. Soc. No. 13 (1990)

ANTICHAETA BREVIPENNIS, LEUCOPHENGA MACULATA, POLYPORIVORA PICTA AND TEPHROCHLAMYS TARSALIS (DIPTERA): INSECTS NEW TO IRELAND.

Martin C. D. Speight, R. E. Blackith and R. M. Blackith

Antichaeta brevipennis (Zetterstedt) (Sciomyzidae)
Wicklow: 5.v.1989, male, O3102 (PU.3), Blackditch Wood, Murrough, in malaise trap by pond, Betula-Salix woods on fen, coll. R. E. and R. M. Blackith, det. MCDS.

Until now, only one species of Antichaeta, A. analis (Meigen), has been found in Ireland (Speight, 1979). A. brevipennis is a distinctive species and was for many years consigned to a separate genus, Hemitelopteryx. The adult fly (as Hemitelopterx) is figured by Knutson and Lyneborg (1965) and its larval biology is detailed by Knutson (1966). The most comprehensive generic key to sciomyzid larvae is that given by Knutson (1987), which provides for the recognition of Antichaeta larvae. The larvae of Antichaeta species feed on the egg masses of sub-aquatic snails, of the genus Succinea. According to Sack (1939), Lundbeck found puparia of A. brevipennis attached to Genista standing in water, in the Spring. The adults of the six Palaearctic Antichaeta species are keyed out by Vala (1989), where A. brevipennis may be distinguished without difficulty. According to Rozkošný and Elberg (1984), A. brevipennis is known in Europe from Scandinavia to France and from Great Britain (Wales) through into European parts of the USSR. But it is a seldom seen insect and is included by Shirt (1987) on the British Red List for insects. The adult habitat of thickly vegetated parts of wet woodland would render this insect difficult to find and its occurrence in a malaise trap is perhaps significant - it may be more easily recorded by trapping than by direct collection methods. In an absence of more extensive malaise trap results from suitable habitats in Ireland it is not possible to come to any firm conclusion as to the status

of A. brevipennis in the island. However, the fact that there are remarkably few records of A. brevipennis from anywhere in Europe suggests this fly should be considered as a candidate for any Irish Red List of insects, unless further evidence accumulates from trapping results somewhere in Europe that A. brevipennis is much more frequent than has hitherto been supposed. Extensive malaise trapping by Vala (1985), in various parts of France, produced no records whatever of A. brevipennis. The single male on which the Irish record is based was derived from a malaise trap which had been left in place for one week. A further two-week malaise-trapping operation in the immediate vicinity yielded no further specimens.

Leucophenga maculata (Dufour) (Drosophilidae)
Waterford: 14.vi.1989, X0782 (NT.3), Glendine, flying round trunk base of old, live Acer pseudoplatanus, patch of mature deciduous woodland beside church, coll. and det. MCDS.
This is the only Leucophenga species known from temperate parts of western Europe and the genus can be recognised from the key provided by Fonseca (1965). There is a second European species, L. quinquemaculata Strobl, which is recorded from Scandinavia and the Alps. From information supplied in Duda (1935), L. maculata can be easily distinguished from L. quinquemaculata as follows:

A. Wing membrane clear; costa ending at junction with R4+5 on wing margin; abdominal tergites 3-5 with up to 5 roundish dark spots ..... maculata

B. Wing membrane infuscated anteriorly, particularly round apical section of R2+3 and round crossveins r-m and dm-cu; costa ending at junction with M on wing margin; abdominal tergites 3-5 with blackish hind margins and a median, longitudinal, dark stripe ..... quinquemaculata

According to Bächli and Rocha Pité (1984), more than 15 species belonging to the genus have been found in Asiatic parts of the Palaearctic. L. maculata is known from various parts of Great Britain and occurs in continental Europe from Scandinavia to Iberia and from the atlantic coast throughout Eurasia to Japan and Korea. This fly is primarily an insect of ancient deciduous forest, whose larvae have been bred from various saproxylic fungi. Buxton (1960) reared it from Hypoxylon, Pleurotus and Polyporus. Given the scarcity of old deciduous trees in Ireland, it is perhaps not surprising that L. maculata has remained unrecorded here until now. Its larval habitat makes it unlikely that this drosophilid will prove widely distributed in the island.

Polyporivora picta (Meigen) (Platypezidae)
Wicklow: 13.x.1988, male O3102 (PU.3), Blackditch Wood, Murrough, swept from undergrowth, coll. and det. REB and RMB.
Chandler (1973) says of this "flat-footed" fly that it is widely distributed in Great Britain, but we have no data on its range in continental Europe. P. picta is not listed for Ireland by Chandler (1976, 1982). It is likely that here, P. picta is more of an overlooked species than a threatened one.

Kessel (1987) provides a generic key to larvae of platypezids, incorporating Polyporivora. As its generic name implies, the larvae of P. picta feed mainly on bracket fungi. REB and RMB have bred P. picta from decaying Betula logs with bracket fungi, collected in Blackditch Wood in February 1989. Both sexes of the fly emerged later. Chandler (1973) remarks that the female of P. picta is rarely collected by sweeping. Kessel (loc. cit.) notes that at a certain time each morning platypezid activity ceases abruptly and does not recommence until the evening, suggesting that this is a mechanism for avoidance of predation by birds whose feeding activity is maximal during the period that platypezids are quiescent.

P. picta emerged from the birch logs collected at Blackditch Wood together with Opetia nigra (Meigen) another platypezid, whose peculiar chitinised, spoon-shaped ovipositor is probably used to insert eggs through the wafer-thin birch bark.

Tephrochlamys tarsalis (Zetterstedt) (Heleomyzidae)
Wicklow: 29.iv.1988. O2117 (PU.4), Knocksink Wood, hatched from tree-hole debris from a large trunk cavity in a living Acer pseudoplatanus, coll. and det. MCDS; August 1988, O3102 (PU.3), Blackditch Wood, Murrough, reared from dead birds, coll. and det. REB and RMB.
Unaccountably, there do not seem to be any published records of this heleomyzid from Ireland. The adult insect may be identified using Collin (1943) or Czerny (1927), both of whom key out all four of the European species in the genus. According to Gorodkov (1984), T. tarsalis occurs from Great Britain through central Europe into western parts of the USSR and from Scandinavia south to Italy. Collin (loc. cit) says of this species "may be bred from old birds' nests". Buxton (1960) reared it from a wide range of macro-fungi, including Clavaria inaequalis, Polyporus, Amanita, Armillaria, Tricholoma, Coprinus, and Lycoperdon. The 46 specimens of this fly reared by Blackith and Blackith (1990), together with its congenor T. rufiventris (Meigen), were from dead birds (mostly pigeons) exposed to carrion flies within the wood. On present evidence, T. tarsalis is one of a number of woodland acalypterates which infest corpses of small birds, and occurs in numbers despite competition with the larger calypterate carrion flies.

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SOME CRANEFLY (DIPTERA: TIPULIDAE, ANISOPODIDAE, PTYCHOPTERIDAE) RECORDS FROM KERRY, IRELAND, 1982.

E. G. Hancock

During a family holiday, 3rd - 14th September, 1982, some tipulid flies were collected in the vicinity of Tralee, Co. Kerry. The weather was mainly dull and wet, although this does not generally inhibit the activities of these insects unless rain becomes heavy. The use of sweep nets is restricted when the material becomes soaked through contact with wet vegetation. The time spent collecting during the period was limited but it was felt that the variety of species was disappointing notwithstanding the above, but no other explanation can be offered.

The following list includes some comment only when it is thought in some way warranted. Otherwise the species are common and widespread. However, the number of records from Ireland in this, as in many other groups of insects, is small and therefore it is thought worth reproducing in its entirety.
Records of Ptychopteridae and Anisopodidae have also been included as they share the same national recording/mapping scheme. Any comments on status or distribution relate to those given in Coe (1950), unless stated otherwise, this being the most recent published source of reference to the whole of the (then known) British and Irish fauna.

Near Ballyheige, 3.ix.1982 (Q7626). There is an area of sand dunes with a small lake (Lake Akeragh) which looked to be of great potential under better climatic conditions for entomology in general.

Limnophila lineola (Meigen), Erioptera stictica (Meigen), Erioconopa trivialis (Meigen), Molophilus griseus (Meigen), Sylvicola cinctus (Fabricius).

Near Tralee, 6.ix.1982 (Q815135). To the north of the ship canal an area of brackish water at Blennerville with Phragmites.

Tipula solstitialis Westhoff, Limnophila adjuncta (Walker) Cheilotrichia cinerascens (Meigen), Erioptera stictica Erioconopa trivialis, Molophilus pleuralis de Meijere. Sylvicola punctatus (Fabricius).

M. pleuralis is generally an uncommon species but can often be found in just this habitat.

Ardfert, 8.ix.1982 (Q7821). In ditches around the country lanes.

Tipula luteipennis Meigen, T. paludosa Meigen, T. fulvipennis Degeer, T. lateralis Meigen, Limonia modesta (Meigen), L. morio (Fabricius), Dicranota bimaculata Schummel, Limnophila lineola, L. nemoralis (Meigen), L. adjuncta, Pilaria discicollis (Meigen), Cheilotrichia cinerascens (Meigen), Erioptera stictica, E. lutea f. taenionota Meigen, E. pilipes (Fabricius), Erioconopa trivialis, Molophilus griseus, Ptychoptera albimana (Fabricius), Sylvicola punctatus.

On the adjacent salt marsh was seen the form of E. stictica with reduced wings.

Glanafahan, 9.ix.1982 (V336970). One of a few sites visited on the Dingle peninsula.

Limonia duplicata Doane, Ormosia albitibia Edwards.

Shevanea, 9.ix.1982 (Q5005). This site was a small area of moorland near the side of the road.

Limonia autumnalis (Staeger), Pedicia immaculata (Meigen), Limnophila meigeni Verrall, Erioptera lutea f. taenionota, Erioconopa trivialis.

Loch Slat, 13.ix.1982 (Q601080). An afforested area with picnicing facilities.

Tipula alpium Bergroth, T. marmorata Meigen, Limonia dumetorum Meigen, L. duplicata, Pedicia claripennis (Verrall), Dicranota bimaculata, Ula sylvatica (Meigen), Limnophila meigeni, Erioptera fuscipennis Meigen, E. lutea f. taenionota, Erioconopa trivialis, Sylvicola cinctus.

All old records of Ula need critical reassessment as two species are now recognised (Hutson and Vane-Wright, 1969).

Near Dreenagh, 14.ix.1982 (Q715320). A small wooded stream valley which provides good habitat and shelter for nematocerous flies.

Tipula alpium, T. marmorata, T. rufina Meigen, Limonia nubeculosa Meigen, L. modesta, L. mitis f. lutea Meigen, Pedicia immaculata, Dicranota pavida (Haliday), Limnophila adjuncta, Paradelphomyia sesilis (Haliday), Cheilotrichia cinerascens, Erioptera maculata Meigen, E. fuscipennis Meigen, Erinoconopa trivialis, Ormosia hederae (Curtis), Molophilus griseus, Sylvicola punctatus, S. zetterstedti (Edwards).
Because of a recent summary of the Anisopodidae (Ashe, 1987), S. zetterstedti is identifiable as only the second record for Ireland. This individual was swept and its identity was

unsuspected at the time. However, by collecting larvae from the roots of Angelica (Angelica sylvestris) recently it has been proved to occur over a wide area of Scotland, from the Outer Hebrides to the Solway coast. There is little doubt that this will prove to be the case elsewhere throughout its range.

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RECORDS OF SOME INSECT PESTS WHICH RECENTLY CAUSED PUBLIC CONCERN IN IRELAND.

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Abstract

This paper gives detailed records of 100 insect taxa which caused public concern in Ireland. Most of the species are of economic and/or medical importance. All the data are based on specimens which prompted individuals or/and organisations to refer them to specialists for determination due to the distress which their presence caused. The paper increases the known distribution of many of the included species. Of particular interest are Pthirus pubis (L.) and Ephestia figulilella Gregson.

Introduction

O'Connor (1983, 1984) provided information on insect pests received for identification by the National Museum of Ireland. Since then, considerable interest has been expressed in assembling more detailed data on insect pests in Ireland. The present paper therefore, contains details of many specimens submitted to the Museum from 1983 to 1989, and also some material received for identification by the relevant authors at the zoological departments of University College, Cork, University College, Dublin and Trinity College, Dublin.

*(All enquiries concerning this paper should be referred to Dr. P. Ashe at his present address given after the references)

Where applicable, nomenclature for scientific and common names follows Seymour (1979). Recorders and the determiners for the data are abbreviated as follows:- P. Ashe (PA); K. G. M. Bond (KGMB); J. A. Good (JAG); D. A. Murray (DM); J. P. O'Connor (JPOC) and L. O'Neill (LON).

American Cockroach (Periplaneta americana (L.))
Dublin: Chapelizod (O13): three live nymphs were discovered amongst newspapers in a post-office sorting office on 23.xi.1983. The newspapers had been imported from India (JPOC).

Australian cockroach (Periplaneta australasiae (Fabricius))
Dublin: Raheny (O23): a live specimen was found in a suburban house, October 1984 (JPOC).
Westmeath: Athlone (N04): adults reported from a storehouse, September 1985 (DM).
Wicklow: Redford (O21): a live adult was obtained on the kitchen floor of a house on 8.iii.1985. The collector believed that it may have been introduced into the house amongst bananas which had been purchased earlier that evening in Bray, Co. Wicklow (JPOC).

Australian spider beetle (Ptinus tectus Boieldieu)
Cork: Cork City (W67): adults found in a private house on 30.iv.1984 (JAG).
Dublin: Dublin City (O13): adults in a house, 23.viii.1983. The householder believed them to be furniture beetles (JPOC); numerous adults in a bag of rayon cleaning buds purchased in a supermarket, March-April 1984 (JPOC, LON); adults in a consignment of flour (whole-grain) in a store (JPOC); adults in cracks in floorboards abutting a wall in an unclean flat; and in a cardboard box storage area in a factory. They were also discovered in the plastic liners of assembled cardboard boxes, November 1984 (JPOC); numerous larvae found on a plate containing ham and crispbread in a café on

12.xi.1984, the crispbread being old stock (LON); in spice in a Chinese restaurant, c. 18.vii.1985 (LON); numerous adults infesting a house, 20.ix.1985. Specimens occurred in a bed, cupboards and cracks in walls (JPOC); adults in a house, c. 18.xii.1985 (LON); adults and larvae found in cereal, September 1986 (DM); large numbers of adults in a flat, December 1987 (PA); adults in a store, 22.vii.1987 (LON); adults feeding on dog-food stored in the attic of a house, 14.x.1988 (JPOC); Dublin: Tallaght (O02): adults in a dwelling house, c. 22.vii.1987 (LON); Dublin: no precise locality: a single adult found in a packet of soup, February 1989 (PA).
Kildare: Naas (N81): adults observed in a house over a period of several years. Live specimens submitted, January 1985 (JPOC).
Kilkenny: Kilkenny (S55): recurring infestation reported, July 1984 in a private house, originally discovered in an upstains bedroom (LON).
Monaghan: Castleblaney (H81): adults and larvae found in biscuits, March 1974 (DM).
Sligo: Sligo Town (G63): after occupants of a private residence complained of skin irritation, three adult beetles were submitted by the Health Board on 9.viii.1983 (JPOC).
Tipperary: Clonmel (S22): adults occurred with psocids in the linings of disposable nappies in May 1985 (JPOC).
Wicklow: no precise locality: adults on the wall of a room in a private house, October 1983 (JPOC)

Bacon beetle (Dermestes lardarius L.)
Dublin: Dublin City (O13): dead adult inside a cavity in a chocolate bar, 1983 (JPOC); live larvae crawling about on a chocolate bar, 22.viii.1984. Bar sent for examination after a patient had entered hospital suffering from diarrhoea (JPOC); live adult submitted 18.iv.1985, the species was stated to be "found occasionally in the house" (JPOC); larvae in a house, July 1988. Four or five were found each morning, usually in the same place over a period of approximately

four weeks (JPOC); Rathgar (O12): live in a flat, 12.x.1983 (JPOC).

Bed bug (Cimex lectularius L.)
Kilkenny: no precise locality: adults found in the bedroom of a house, December 1981 (DM).
Louth: Dundalk (J00): numerous specimens infesting bed headboards in a house, August 1983. The occupant had been bitten by the insects (PJOC).
Mayo: no precise locality: several specimens from a bed were submitted, 6.v.1986 (JPOC, LON).
Meath: Navan (N86): nymphs and adults were reported biting humans in a bed, 9.viii.1983 (JPOC).
Sligo: Sligo Town (G63): over 40 specimens (nymphs and adults) were sent for determination. They were discovered in the sleeping quarters of a house, 6.vii.1987. The submitted material all originated from the headboards of the beds in one bedroom (JPOC).

Bird flea (Dasypsyllus gallinulae gallinulae (Dale))
Waterford: no precise locality: adults discovered emerging from joints of some plastic tiles on the floor of a National School, 30.v.1985 (JPOC).

Biscuit beetle (Stegobium paniceum (L.))
Cavan: Killashandra (H30): dead specimens very numerous in a sample of milk powder, 16.x.1985. Pupal skins also present (JPOC).
Dublin: Dublin City (O13): large numbers of adults infesting a government building, May 1983. The infestation was traced to trays containing rat poison which had been set out around the premises by a pest control firm. The species was consuming the grain used to attract the rodents (JPOC); numerous adults found dead beside rat poison in wholesale premises, 25.viii.1983 (JPOC); health inspectors discovered large numbers infesting poppadams in an Indian restaurant, 1.xii.1983. The poppadams were imported from

Bombay, India, via England (JPOC); adults in a library, 8.xii.1983. The problem may have originated from pigeons nesting in the roof space (JPOC); live adults reported, 17.iv.1984, crawling into a house under the doors. Large numbers were evident every day. The problem had occurred for several weeks (JPOC); live adults in a house mainly on the first floor, 18.iv.1984 (LON); adults found in the canteen of an office block, July 1986 (LON); in animal pelleted food stored in a basement, 18.ix.1988 (PA).
Waterford: Waterford City (S61) adults " emanating from a ventilator" in an old fireplace which is now blocked up in an office, 7.vi.1984. The infestation was first noted during the same month the previous year (LON).

Biting midge (Ceratopogonidae)
Monaghan: no precise locality: one dead male adult found in a delivery of plastic scoops which originated in Holland, January 1989 (PA).

Bluebottle (Calliphora vicina Robineau-Desvoidy)
Dublin: Dublin City (O13): large numbers of larvae found crawling amongst chicken and turkey giblets stored on the top of an ice-machine in a hotel, 21.vi.1983 (JPOC); adults and larvae submitted from the occupants of a house, January 1986 (LON).

Bluebottle (Calliphora sp.)
Louth: Drogheda (O07): a single mature larva was found in a carton of fresh milk, December 1988 (PA).

Broad-horned flour beetle (Gnatocerus cornutus (Fabricius))
Cavan: Killashandra (H30): adults infesting flour in premises, 16.x.1985 (JPOC).
Cork: Cork City (W67): adults found in a bakery, infesting a gluten-free loaf, 1.xi.1985 (JAG).

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Brown house-moth (Hofmannophila pseudospretella (Stainton))
Cork: Cork City (W67): larvae infesting carpets in a private house in October 1987 (KGMB); larvae infesting books stored in archives, February 1988 (KGMB); Mitchelstown area (R81): larvae found in dairy, February 1989 (KGMB).
Donegal: Gweedore (B82): larvae in an old copy-book and on the walls of a bedroom in a house, 13-15.iv.1984 (LON); Killybegs (G77): on 25.vii.1985, a person complained of abdominal pain and vomiting. A larva was found alive in the vomit. It was claimed that it was vomited but this is believed to have been unlikely (JPOC).
Dublin: Dublin City (O13): a mature larva found alive in a packet of cheese and onion crisps purchased in a shop, 22.ii.1984 (JPOC); live mature larvae on a bathroom floor, 24.ii.1984 (LON); a larva in toasted bran, 18.vi.1984 (LON); an early instar larva found alive in association with a cotton bandage in a hospital, 9.i.1985 (JPOC); live larva in a domestic house, 18.iv.1985 (JPOC); live larvae in food cupboards in a kitchen, 1986 (JPOC); live larva in a box of long-grained rice in a house, January 1986 (JPOC); live larvae in rice purchased in a supermarket, December 1985 (LON); larva found in dried cereal product, March 1988 (DM); Rathfarnham (O12): larvae infesting a new house, February 1984 (LON).
Galway: Galway City (M22): larvae found in a breakfast cereal, April 1987 (DM).
Kildare: Ballytore (S79): one mature larva found in packaging material, May 1988 (PA).
Louth: Dundalk (J00): larva found in confectionery, March 1987 (DM).
Monaghan: no precise locality: in large numbers, attacking the carpets in a ten year old bungalow which had been used for storage, June 1984 (LON).
Sligo: Sligo Town (G63): larvae in a carpet, November 1983 (LON); three larvae alive in a sliced white loaf of bread, March 1985

(JPOC).
Waterford: no precise locality: larvae found clinging to carpets in the sitting room of a house, 28.ii.1986 (LON).
Wexford: New Ross (S72): larva consuming the pile of a carpet, around the edges, in a house, 5.xii.1988 (JPOC); Wexford Town (T02): live larvae in a meat-dish in a house, December 1988 (JPOC).

Burying beetle (Nicrophorus investigator Zetterstedt)
Wexford: Mulgannon (c.S91): an adult occurred in a kitchen sink, 12.ix.1984 (LON).
Wicklow: Kilbride (O01): in a house, 24.x.1984 (JPOC).

Case-bearing clothes moth (Tinea pellionella (L.))
Dublin: Dublin City (O13): large numbers of larvae discovered alive in a city centre flat, 18.iv.1984 (LON); Shankill (O22): larvae found in a wall tapestry, December 1982. The tapestry had been purchased in Ethiopia but the infestation was of local origin (DM).
Monaghan: no precise locality: with H. pseudospretella in a room of a ten year old bungalow which had been used for storage, June 1984. The larvae were attacking the carpet (LON).

Cat flea (Ctenocephalides felis (Bouché))
Dublin: Dublin Airport (O14): one specimen, 21.vi.1984 (JPOC); Dublin City (O13): specimens were submitted on 18.vii.1984 after three people living in flats complained of rashes. Stray cats were observed in the vicinity of the flats (JPOC); an adult flea was captured while crawling on a bed in a house, 7.vi.1984. The householder owned two cats (JPOC).

Cellar beetle (Blaps mucronata Latreille)
Dublin: Dublin City (O13): live adult submitted 6.ii.1986. It was discovered in a house where several adults occurred over a period of time (LON).

Cigarette beetle (Lasioderma serricorne (Fabricius))
Dublin: Dublin City (O13): numerous adults in plant material imported from Jamaica, 1986 (JPOC).

Codling moth (Cydia pomonella (L.))
Dublin: Clontarf (O13): one larva was found under the "skin covering of mattress" in a house, 4.ii.1985. Apples had been stored in the bedroom concerned (LON).

Common black ant (Lasius niger (L.))
Dublin: Dublin City (O13): adults occurred in the kitchen of a house over a period of time. Specimens submitted, 24.v.1984 (JPOC); adults causing problems for the occupants of three houses, 21.ii.1985 (JPOC); Howth (O23): adults submitted for determination 5.ix.1985. They had been collected in a domestic dwelling where they had been emerging from behind skirting boards (LON).
Waterford: Waterford City (S61): winged adults entering houses, 12.vii.1983 (JPOC); no precise locality: an adult male, female and workers were taken on 21.viii.1985 in the bathroom of a house. They had been observed emerging from behind timber panelling on walls. A swarm had appeared on 20.viii.1985 (LON).
Wexford: Wexford Town (T02): specimens infesting a flat, c. 25.iv.1984 (LON); Rosslare Strand (T01): large numbers of winged adults invaded a bungalow, c. 9.vii.1984. " The insects came up from a hole surrounding the radiator pipe in the hall. They walked along the walls and a large group was found in a dressing table .....a group invaded a sweet left in an open bin" (LON).

Common clothes moth (Tineola bisselliella (Hummel))
Waterford: Waterford City (S51): larvae found in a carpet, August 1984 (DM).

Common cockroach (Blatta orientalis L.)
Waterford: Dungarvan (X29): an adult discovered in a bakery, November 1985 (JPOC).

Common earwig (Forficula auricularia L.)
Dublin: Ballyfermot (O03): several nymphs submitted 3.vii.1986 having been found in a private dwelling (LON); Dublin City (O13): adults "invading" a domestic house, October 1977 (DM); adult found in a hamburger, May 1988 (DM).
Louth: Dundalk (J00): three reports by a health inspector of nymphs entering houses, July 1985 (JPOC); Castlebellingham (O09): adults in seaside caravans, 1986 (JAG).
Wicklow: Arklow (T27): adult found in a kettle containing boiled water, 17.x.1983. It was believed by the complainant that the specimen had originated in the water-supply. However, it had evidently merely hidden itself in the kettle and had been boiled by mistake (JPOC); Greystones (O21): adults invading a house, 1987 (JAG); no precise locality: in a holiday home near the sea, 1988 (JAG)

Common froghopper (Philaenus spumarius (L.))
Dublin: Dublin City (O13): adult in a carton of pineapple juice packed in Great Britain, 19.vii.1983 (JPOC).

Common furniture beetle (Anobium punctatum (De Geer))
Donegal: Carrigans (C31): adults found at window of a house, June 1989. The house had been treated for woodworm three years previously (DM).
Dublin: Dublin City (O13): two dead adults discovered in a bedroom which contained a woodworm-infested wardrobe, July 1984 (LON);

adults reported from a vacant house, 18.vii.1985 (JPOC); adults in a warehouse, 12.vii.1988 (JPOC); adults found on a carpet and in a bed in a house, 25.vi.1985 (JPOC); several adults in a house, 19.vi.1985 (LON); dead adults discovered on the window ledge of a bedroom in a house, July 1984 (JPOC); Dundrum (O12): adults in a house, 17.vii.1987 (LON).
Mayo: Westport (L98): a domestic house with a extensive problem, caused by this species, mainly in the roof timbers, May 1988 (PA).
Wexford: Wexford Town (T02): an infestation causing problems in the first floor bedroom of a flat, 1987 (JPOC).
Wicklow: Roundwood (O10): large number in untreated wood in a domestic house, 13.vii.1989 (PA).

Common green lacewing (Chrysopa carnea Stephens)
Dublin: Clondalkin (O03): specimen discovered c. 24.x.1984 in an empty container ("can") which was one of a number imported from London and stored in the Dublin Docks for some time (JPOC).
Mayo: no precise locality: an adult was submitted on 30.vi.1987 by an environmental health inspector. The owner of the house in which it was found was "concerned that an infestation may be about to take place" (LON).

Common sexton (Nicrophorus vespillo (L.))
Sligo: Sligo Town (G73): adult beetle in a consignment of old sacking, September 1987 (DM).

Confused flour beetle (Tribolium confusum Jacquelin du Val)
Dublin: Dublin City (O13): "larva found in a baby's feeding bottle on 12.x.1986". The bottle contained a solution of babyfood (LON).

Crab louse (Pthirus pubis (L.))
Dublin: Dublin City (O13): dead specimen received from a medical doctor after removal from a male patient who returned from a holiday in Greece, Turkey and Italy, August 1974 (DM); live

specimens were sent for determination on 31.x.1984 after they had been discovered by a doctor on a patient (young adult male). The person had recently returned from the Middle East (JPOC).

Devil's coach-horse beetle (Staphylinus olens Müller)
Kilkenny: no precise locality: an adult in a dwelling house, 17.xi.1986 (LON).
Wexford: Rathaspick (T01): several adults in a house, 2.x.1986 (JPOC)

Dog flea (Ctenocephalides canis (Curtis))
Dublin: Dublin City (O13): adults found in a recently occupied house, April 1985 (DM).

Dor beetle (Geotrupes spiniger (Marsham))
Cork: Cork City (W67): adult found in a brewery, 14.xi.1985 (JAG).

Dried currant moth (Ephestia cautella (Walker))
Cork: Cork City (W67): moths and larvae found infesting tubes containing substances used in the manufacture of cosmetics, October 1985 (KGMB).

Dronefly (Eristalis tenax (L.))
Donegal: Redcastle (C53): larvae reported entering a dwelling house apparently through the sanitary pan. Large numbers were present during the summer. The infestation did not seem to originate from the septic tank but appeared to be gaining entry at the inspection chamber. Specimens submitted 21.ix.1983 (JPOC).
Kildare: Maynooth (N93): collecting yard for cows with many larvae 15.ix.1983. Specimens also occurred in the milking parlour and the cattle sheds (JPOC).
Longford: no precise locality: August 1983, numerous larvae crawling around a parlour belonging to a dairy proprietor (JPOC).

Dung beetle (Aphodius rufipes (L.))
Cork: near Carrignavar (W67): two specimens found in a dairy, January 1989 (KGMB).

Dung fly (Scathophaga stercoraria (L.))
Wexford: Drinagh (T01): adults swarming at a light at the front of a dwelling house at night, a piggery was sited near the house, 23.x.1985 (LON).

European chicken flea (Ceratophyllus gallinae (Schrank))
Cavan: no precise locality: larvae and adults reported in large numbers from a poultry house, May 1984 (DM).
Dublin: Mulhuddart (O04): a husband reported that his wife had been badly bitten by some insect species on the neck, face and other parts of her body. A dead European chicken flea from her bed was submitted on 1.v.1984 (JPOC).

Fever fly (Dilophus febrilis (L.))
Donegal: Letterkenny (C11): according to the enquirer, the flies were "blamed for biting people while on the beach near sewage pipes", September 1987. The flies were not responsible for the attacks (JPOC).
Dublin: Sutton (O23): specimens sent by an environmental health inspector from a garden, 11.ix.1986. At the time, swarms were common throughout the Dublin area (JPOC).

Fig moth (Ephestia figulilella Gregson)
No precise locality: A single mature larva found in sultanas imported from Turkey, April 1989 (PA).

Firebrat (Thermobia domestica (Packard))
Dublin: Templeogue (O12): numerous specimens in boxes containing old books in the attic of a house, 16.i.1984. It was also obtained in the underhearth of a fireplace. It is believed that the

infestation originated in the fireplace and that individuals migrated to the attic via a newly installed back-boiler heating system (JPOC).

Flea beetle (Longitarsus pratensis (Panzer))
Dublin: Dublin City (O13): large number of adults observed on the walls of a house, 15.ix.1983 (JPOC).
Sligo: Grange (G64): found in considerable numbers on the exterior of a two year old bungalow. Specimens also occurred indoors as the result of doors and windows being left open (LON).

Forest bug (Pentatoma rufipes (L.))
Dublin: Dublin City (O13): a specimen of this harmless species was obtained in a wicker basket in a house, September 1985 (JPOC).

Fruit flies (Drosophilidae)
Wexford: no precise locality: numerous adult flies on a cloth covering home-brewed beer, August 1983 (JPOC).

Fur beetle (Attagenus pellio (L.))
Dublin: Palmerstown (O03): adults in a domestic house appearing sporadically over a period of about two years, first reported in February 1989 (PA).
Tipperary: Thurles Town (S15): two adults submitted, having been found in a domestic house carpet, 8.v.1985 (JPOC).

Gall wasps (Andricus kollari (Hartig))
Dublin: Tallaght (O02): an infestation of these harmless insects in a health centre on 30.viii.1983 was traced to oak marble galls which had been brought into the centre and left on a shelf (JPOC).

German cockroach (Blattella germanica (L.))
Cork: Cork City (W67): two adult specimens found in a spider's web

in a restaurant in 1984, also a live cockroach, probably of this species, on a chair in the same restaurant (JAG)
Dublin: Dublin City (O13): infesting the kitchen of a hospital, July 1985 (JPOC); Dublin Airport (O14): a dead specimen discovered in a Nigerian aeroplane, 9.vi.1986 (JPOC).

Giant wood wasp (Urocerus gigas (L.))
Dublin: Dublin City (O13): a live adult of this harmless species in a warehouse of an industrial premises, 12.vii.1985. The management of the relevant firm wished to know if it was necessary to fumigate the premises (LON).

Golden spider beetle (Niptus hololeucus (Faldermann))
Dublin: Dublin City (O13): adults in large numbers in damp mouldy basement of a bookshop, 9.ix.1989 (PA); adults infesting a house in large numbers, 31.vii.1984 (LON).

Greenbottle (Lucilia caesar (L.))
Dublin: Dublin City (O13): larvae in pressed meat, 28.vii.1986 (LON).
Mayo: no precise locality: adults occurring near a large industrial dump, 6.ix.1984 (LON).

Green cluster fly (Dasyphora cyanella (Meigen))
Wicklow: Bray Head (O21): a large number of adults in a house, May 1984 (JPOC).

Ground beetle (Amara aenea (De Geer)
Dublin: Dublin City (O13): adults entering a public building in large numbers, August 1988 (JPOC).

Ground beetle (Bradycellus verbasci (Dufour)
Dublin: Dublin City (O13): many specimens in a local government building, 23.viii.1984 (JPOC).

Hairy fungus beetle (Typhaea stercorea (L.))
Galway: Glennamaddy (M66): hay infested with adults, 9.ix.1985 (JPOC).

Hawthorn shieldbug (Acanthosoma haemorrhoidale (L.))
Dublin: Dublin City (O13): adult of this harmless species submitted after being discovered in a house, 1.xi.1984. It was thought that the specimen was an imported pest (JPOC); adults in a house, October 1985 (LON); Dublin: no precise locality: an adult specimen frightened customers in the delicatessen area of a supermarket, March 1989(PA). Louth: Dundalk (J00): an adult found in a supermarket, November 1984 (JPOC).

Honey bee (Apis mellifera L.)
Dublin: Dublin City (O13): worker bees discovered in a can of grapefruit packed in South Africa, c. 30.v.1984 (LON).

House fly (Musca domestica L.)
Dublin: Shankill (O22): numerous adults entering a house after spent and fermenting hops had been spread outside on a garden, July 1984 (JPOC); Dublin City (O13): three larvae found under "Velcostrip" on a special chair in a hospital, December 1985. They were possibly passed by a child (JPOC).

Human flea (Pulex irritans L.)
Donegal: no precise locality: in a dwelling house, 9.x.1985 (LON).
Dublin: Clondalkin (O03): live specimens submitted 18.ix.1985 after biting the human occupants of a house (JPOC).
Tipperary: Golden (S03): specimens found in clothing, 25.vi.1985 (JPOC).

Indian meal moth (Plodia interpunctella (Hübner))
Monaghan: no precise locality: a single dead adult found in a can

of powdered baby food, August 1988 (PA).

Large elm bark beetle (Scolytus scolytus (Fabricius))
Carlow: Carlow Town (S77): house infested with adults after elm logs were used for firewood, 8.v.1987 (JPOC).

Larger pale booklouse (Trogium pulsatorium (L.))
Dublin: Clonsilla (O03): specimens occurring "all over the house", 11.vii.1984 (JPOC).

Leaf beetle (Lochmaea crataegi (Forster))
Dublin: Dun Laoghaire (O22): an adult discovered on board a trailer which had come from London with a consignment of charcoal destined for Cork, 23.v.1985 (JPOC).

Lesser earwig (Labia minor (L.))
Sligo: Sligo Town (G63): adult found in a milk carton, June 1987 (DM).

Lesser mealworm beetle (Alphitobius diaperinus (Panzer))
Cavan: Stradone (H40): adults infesting a broiler house on a farm. They were present in the roof, the floor and elsewhere, May 1989. Fumigation had not succeeded in eliminating the infestation (JPOC).
Donegal: Buncrana (C33): adults found in a poultry house, June 1983 (DM).
Monaghan: no precise locality: adults and larvae found amongst insulation material in the walls of a piggery, November 1984 (DM).

Lupin aphid (Macrosiphum albifrons Essig)
This species was previously only known from Killiney and Castleknock, Co. Dublin (O'Connor and Speight, 1987).
Cork: Midleton (W87): two healthy lupin plants growing in a

domestic garden turned black and died after an infestation, summer 1985 (JPOC).
Dublin: Malahide (O24): lupins attacked in gardens, summer 1985, 1986 (JPOC).
Wicklow: Greystones (O21): lupins, in a garden of a house, completely destroyed by an infestation, 1985 (JPOC).

Maize weevil (Sitophilus zeamais Motschulsky)
Dublin: no precise locality: a dead adult specimen found in a bag of rice, February 1988 (PA).

Mediterranean flour moth (Ephestia kuehniella Zeller)
Dublin: Dublin City (O13): adults common in bakery, with Oryzaephilus mercator, 23.viii.1983 (JPOC); numerous larvae with their webbing present on the outside of flour sacks in a bakery, 12.ix.1983 (JPOC); larvae and wing fragments discovered in a crisps factory, c. 5.iii.1984 (LON); live larvae on a grain product (maize) 14.viii.1984 imported from France (LON); one mature larva found in a packet of rice, February 1988 (PA).

Merchant grain beetle (Oryzaephilus mercator (Fauvel))
Cork: Cork City (W67): adults infesting rice in a hospital kitchen, September 1987 (KGMB).

Moth flies (Psychodidae)
Dublin: Malahide (O24): large numbers swarming inside the kitchen extension of a house, 5.iii.1984 (JPOC).
Roscommon: no precise locality: in house, 18.xii.1985 (LON)

Mud dauber wasp (Sceliphron spirifex (L.))
Cork: Cork City (W67): an adult was found in cellulose powder exported to Italy, 1983. The specimen was sent to Ireland for determination and it was established that the contamination had taken place outside the country as the species is not a native one

(JPOC).

Non-biting midge (Chironomus sp.)
Limerick: no precise locality: larva in tap-water from a farm, August 1981 (DM).

Non-biting midge (Cricotopus sp. and Psectrocladius sp.)
Meath: Kells (W77): found in tap-water. Follow-up investigations revealed that these originated in holding-tanks and gained access to the piping through a faulty filter (DM).

Pharaoh's ant (Monomorium pharaonis (L.))
Dublin: Dublin City (O13): live workers and a queen in the mortuary of a hospital, 21.ii.1984 (JPOC); workers feeding on biscuits in the main kitchen of a hospital, December 1984 (JPOC).
Louth: Tallanstown (N99): numerous specimens "swarming" over food etc. in an old cottage which was built in the middle of the last century, 18.ix.1985. The ants appeared to be originating from between the floor boards (JPOC).

Plaster beetle (Aridius nodifer (Westwood))
Cork: Cork City (W67): adults found in a warehouse on the 23.viii.1985 (JAG); Glanmire (W77): adults infesting a private house, September 1988 (KGMB).
Meath: Navan (N86): adults found in a domestic house, April 1974 (DM).
Wexford: Clonard Great (T01): adults in the dining room of a newly built house, April 1989 (JPOC).

Plaster beetle (Corticaria elongata (Gyllenhal))
Mayo: Swinford (M39): numerous adults in the packing room of laboratories, 19.viii.1983 (JPOC).

Poplar hawkmoth (Laothoe populi (L.))

Dublin: Dublin City (O13): an adult discovered on industrial premises, 28.vii.1983. It was believed to be an importation (LON).

Psocids (Psocoptera- not identified to species)
Cork: Cork City (W67): immature psocids found infesting stored tea, October 1984 (KGMB); adults and immatures found in a newly plastered dwelling house, 1985 (JAG).
Dublin: Dublin City (O13): on oak furniture premises, August 1983 (JPOC); adults in a house, February 1984 (LON); adults crawling about in cupboards in a house, June 1985. Some specimens occurred in cereals and dried pasta (JPOC); infesting the walls in the hallway of a dwelling house, July 1986 (LON); specimens in an area near a sink unit in the kitchen of a house, 25.vii.1986 (LON); in a city centre flat, 22.vii.1987 (LON).
Leitrim: Carrick-on-Shannon (M99): infesting the kitchen of a house, September 1983 (JPOC).
Mayo: Castlebar (M19): large numbers in a new dwelling house, 12.vii.1984 (LON).
Meath: Navan (N86): numerous adults reported from a new house, October 1981 (DM).
Tipperary: Clonmel (S22): present with Ptinus tectus in the linings of disposable nappies, May 1985 (JPOC).

Rose chafer (Cetonia aurata (L.))
Dublin: Dublin City (O13): a single adult specimen found on Italian grapes in a supermarket, September 1988 (PA).

Rove beetle (Philonthus laminatus (Creutzer))
Cork: Cork City (W67): adult specimen in a Swiss Roll, 25.x.1988 (JAG).

Rust-red flour beetle (Tribolium castaneum Herbst)
Cork: Cork City (W67): adults infesting a warehouse, February 1988 (KGMB).

Dublin: Dublin City (O03): adults and larvae found in a cereal, manufactured in Ireland. Package exported to Cyprus and returned following a complaint, August 1987. The infestation could have occurred during transportation or storage (DM).

Saw-toothed grain beetle (Oryzaephilus surinamensis (L.)
Cork: Cork City (W67): adults in stored food, in a hospital, 13.iii.1986 (JAG); adults found in the food storage area in a hospital, August, 1988 (KGMB).
Dublin: Dublin City (O13): numerous specimens infesting food in a bakery on 23.viii.1983. Ephestia kuehniella and Oryzaephilus mercator were also present (JPOC); numerous adults and larvae infesting 40 tons of dried currants imported from Greece in a container, November 1984. The consignment was destroyed by health officials (JPOC); Blackrock (O22): several adult beetles in dried fruit, May 1988 (PA).
Waterford: no precise locality: large numbers of larvae in sultanas which were imported from Turkey, September 1988 (PA).

Seven spot ladybird (Coccinella septempunctata L.)
Cork: near Belgooly (W65): larvae discovered in a potato field and which were thought to be Colorado beetles (Leptinotarsa decimlineata (Say)), 1984 (JAG); near Nohaval (W75): pupae found in a potato field also confused with Colorado beetles, 1984 (JAG).

Sewage fly (Leptocera caenosa Rondani)
Dublin: Clondalkin (O03): specimens submitted after being discovered in a house, 21.ix.1985 (LON); Tallaght (O03): adults abundant on the windows of a house on a four year old estate, 18.i.1984 (JPOC).

Sheep maggot fly (Lucilia sericata (Meigen))
Cork: no precise locality: several mature larvae discovered exiting from the anus of a sick patient in hospital, July 1988 (PA

and KGMB).

Silverfish (Lepisma saccharina (L.))
Dublin: Dublin City (013): a specimen was found alive in a library on 23.iii.1985 (JPOC); Tallaght (003): a live adult found alive in a packet of cereal in a house. The silverfish, in this case, was resident in the house and climbed into the open packet from which it was unable to climb out, July 1988 (PA).
Tipperary: no precise locality: a single live adult found in a tin of soup. It probably climbed into the partially opened tin but was unable to climb out, February 1989 (PA).
Wexford: no precise locality: an infestation was reported on the 11.vii.1985 (JPOC).

Small magpie moth (Eurrhypara hortulata (L.))
Dublin: Tallaght (003): one mature larva found in a tub of antiseptic cream, November 1988 (PA).

Snail killing beetle (Silpha atra (L.))
Dublin: Dublin City (013): specimen found alive in Italian parsley in a supermarket, 30.iii.1984 (JPOC).

Strawberry root weevil (Otiorhynchus rugosostriatus (Goeze))
Wicklow: Arklow (T27): adult reported from an old house, 14.x.1983. It was thought "to be responsible for biting a baby (covered with "insect" bites) in a cot". However this species could not have been responsible for this incident (JPOC).

Swallow parasitic fly (Crataerina hirundinis (L.))
Dublin: Dublin City (013): adults found in a modern office block, June 1987. These insects are ectoparasites on swallows and a swallow's nest was located in proximity to the office (DM).

Swift and swallow parasitic fly (Crataerina pallida (Latreille))
Dublin: Dublin City (O31): adult in the bed of a flat after new tenants took possession, 22.vi.1985. The infestation was traced to a bathroom ventilation aperture containing nesting swifts (O'Connor and Sleeman, 1987).

Thrips (Thysanoptera)
Wicklow: Arklow (T27): October 1986, specimens swarmed into a house and caused distress to the occupants by biting them (JPOC).

Turnip moth (Agrotis segetum (Denis and Schiffermüller))
Dublin: Kinsealy (O24): 41 specimens caught between 6.vi. and 12.ix.1986 (KGMB).

Varied carpet beetle (Anthrenus verbasci (L.))
Dublin: Dublin City (O13): numerous live adults noted on the window ledges of an upstairs bedroom of a house (O'Connor and Nash, 1986).

Vine weevil (Otiorhynchus sulcatus (Fabricius))
Dublin: Dublin City (O13): three adults discovered wandering about in a house, April 1985. The occupant had recently purchased potted plants which may have contained the species (JPOC); adult in a house, 23.iv.1986 (JPOC); live adult inside the hall-door of a house, April 1987 (LON); Clonsilla (O03): live adults in a house, January 1986 (LON); Sutton Cross (O23): three live adults in a house, 6.v.1984 (JPOC); Templeogue (O22): an adult found crawling on the front of a kitchen cupboard in a private dwelling, 29.v.1985 (JPOC).
Sligo: no precise locality: live adults in a house, April 1985 (JPOC).

Vinegar fly (Drosophila melanogaster Meigen)
Meath: Navan (N86): adults reported from a house, September 1984 (DM).

Warehouse moth (Ephestia elutella (Hűbner))
Dublin: Swords (O14): the remains of two dead adults were found in a box of chocolates. A more detailed examination showed that each larva had fed on a individual chocolate, the surfaces of which contained silken webbing and frass, May 1988 (PA).
Galway: Galway City (M22): larva found in a breakfast muesli, December 1988 (DM).

White-shouldered house moth (Endrosis sarcitrella (L.))
Cork: Cork City (W67): larva infesting tea bag, December 1986 (KGMB).
Dublin: Rathgar (O21): live larva present on a dinner plate along with cooked sausage rolls, 1983 (JPOC).
Sligo: Sligo Town (G63): larvae found in a carpet along with H. pseudospretella, November 1983 (LON).

Window gnat (Sylvicola fenestralis (Scopoli))
Dublin: Dublin City (O13): adults in a house, August 1983 (JPOC); dead adults discovered "in a basin of cornflour", October 1986. The complainant believed that they were gnats or mosquitoes (LON).

Window gnat (Sylvicola punctatus (Fabricius))
Cork: Cork City (W67): a single larva found in a cream cake - the normal habitat of the larvae is cow dung, 5.iv.1989 (PA and KGMB).

Woodboring weevil (Euophryum rufum (Broun))
Dublin: Dublin City (O13): adult in a house, 20.xii.1985 (LON).

Woodboring weevil (Pentarthrum huttoni Wollaston)
Mayo: no precise locality: adults submitted alive 20.xii.1985

after they had been found infesting a hospital which had dry rot (LON).

Yellow Mealworm beetle (Tenebrio molitor L.)
Dublin: Dublin City (O13): remains of an adult discovered in a sealed packet of long grain rice purchased in a supermarket, 28.x.1983 (JPOC); dead larvae in bread purchased in retail shop on 28.ii.1985 (JPOC).

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PYROPTERUS NIGRORUBER (DEGEER) IN IRELAND (COLEOPTERA: LYCIDAE), WITH A KEY TO DISTINGUISH THIS BEETLE FROM RELATED EUROPEAN SPECIES.

Martin C. D. Speight

Pyropterus nigroruber (Degeer) forms part of Ireland's remnant old-forest fauna. It is a red-brown, flattened centimetre-long beetle which has been found here only very occasionally, and only in south west Kerry. This brief note brings together available distribution data and considers the species' status in Ireland and its biology. A brief key is also presented, for distinguishing the adult of P. nigroruber from related European species.

Distribution of P. nigroruber in Ireland

In Johnson and Halbert (1902), P. nigroruber appears under the name Pyropterus affinis Paykull in the family Malacodermidae. They note that the first record of the species from Ireland was by Hardy, who found it in Killarney (Co.Kerry) in 1866. The only additional Irish records they cite are further captures from Killarney and a record from Kenmare (Co.Kerry). There does not seem to be any published reports of the occurrence of this insect in Ireland since. In the National Museum of Ireland collections there are Irish specimens of P. nigroruber as follows:
Kerry: Kenmare, coll. J. R. Hardy; Muckross, Killarney, September 1953, coll. E. F. Bullock; Flesk, Killarney, coll. E. F. Bullock; Killarney, 6.x.1930, coll. E. F. Bullock.
To these, I can add one further Killarney record: larvae collected February 1989, from red-rotted Fagus log in Fraxinus/Quercus woods on sandstone on the Muckross peninsula (V9586), hatched 5-15.v.1989, coll. MCDS.

So, although known in Ireland for more than 100 years, P.

nigroruber has still only been found here in the Killarney valley and at Kenmare. This is a typical relict distribution pattern, as exhibited by old-forest insects in Ireland, and involves such a small total area and so few localities that it renders P. nigroruber eligible for inclusion on lists of organisms vunerable to extinction in Ireland. It might be considered unjustified to claim that P. nigroruber is at the moment endangered in Ireland, because the species has evidently persisted in the same small area for the last hundred years and sites where it occurs are now protected areas within a National Park. However, the dead wood habitat in which its larvae develop is by no means abundant in the Killarney Park and is itself extremely vunerable to changes in management practice. Determined efforts to "tidy" the woodland could easily eradicate both habitat and beetle. Ireland is not the only part of Europe in which P. nigroruber has become very scarce. In Great Britain it has only been recorded from a handful of localities and is included in the British Red Data book for invertebrates (Shirt, 1987).

Identification of P. nigroruber

The adults of lycid beetles have a very characteristic appearance. Over much of Europe six genera are represented, all of which closely resemble each other and can be recognised as lycids from the coloured figures provided by Harde (1984). Separating the genera is less straight forward. Three of these genera are known from the British Isles, but at the moment only Pyropterus has been recorded in Ireland. The three British genera are keyed out by Joy (1932), who, however, omits one (Platycis cosnardi (Chevrolat)) of the known British species from his keys. All six European genera are keyed out (in German) by Freude et al. (1979). Joy's key is a little difficult to interpret and, so far as I am aware, there is no English language key distinguishing all six European genera. As an aid to determination of these insects a brief key is given

below. It incorporates all the genera and species known from temperate parts of western Europe. This key could not be used for identification of females of Homalisus. The female of H. fontisbellaquei Geoffroy is brachypterous and resembles the adult female of glow-worms.

1. Antennal segments 2 and 3 short, of equal length.....2
--- Antennal segment 2 clearly shorter than antennal segment 3..3

2. Pronotum with two pairs of keels, one pair longitudinal, meeting in the mid-line at both anterior and posterior margins of the pronotum but diverging widely between, the other pair transverse (these transverse keels could also be described as a single, transverse keel, absent across the central area of the prothorax between the longitudinal keels), joining the longitudinal keels in the posterior half of the pronotum and running outwards to reach the lateral margins of the pronotum (pronotum black)..... Pyropterus nigroruber (Degeer)
--- Pronotum with one pair of diagonal keels, running from close to the mid-line in the anterior half of the pronotum to the postero-lateral corners of the pronotum posteriorly..... ..... Homalisus fontisbellaquei Geoffroy

3. Pronotal keels sharp, well-defined, reaching anterior margin of pronotum; distance from anterior margin of eye to tip of clypeus no greater than the maximum width of an eye (side view) 4
--- Pronotal keels incomplete, imprecise, confined to posterior half of pronotum (pronotum partly red); anterior part of head prolonged, so that distance from anterior margin of eye to tip of clypeus is twice the maximum width of an eye (side view)... ..... Lygistopterus sanguineus (L.)

4. Pronotum with a median, longitudinal keel (which starts at the anterior margin of the pronotum and reaches into the posterior half of the pronotal surface) and a transverse keel (which reaches the lateral margins of the pronotum obliquely), so that the pronotal surface is divided into four fields (pronotum partly red)..... Aplatopterus rubens (Gyllenhal)
--- Pronotum with a pair of longitudinal keels separated for most of their length and forming a median field between them, plus lateral keels, so that the pronotal surface is divided into more than four fields.....5

5. Pronotum mostly red.....6
--- Pronotum entirely black.....7

6. Antennae entirely black ..... Dictyoptera aurora (Herbst)
--- Two basal antennal segments, plus terminal antennal segment, red ..... Dictyoptera fiedleri Reitter

7. Elytra hairy..... Platycis minutus (Fabricius)
--- Elytra bare..... Platycis consnardi (Chevrolat)

Aplatopterus rubens

A montane, continental species, which reaches the Vosges mountains but is unknown in the British Isles. It is associated with conifers and occasionally with Fagus. During hot weather, the adult beetle is frequently found away from rotten wood, in flight or on flowers in the sun. It is quite active and runs rapidly over logs, taking to flight quite readily.

Dictyoptera aurora

A montane species associated with Abies, Picea and Pinus. It occurs in the Scottish highlands, in association with ancient P. sylvestris woodland. The adults can be found under bark and live communally. According to Palm (1959) D. aurora is associated

especially with stumps. I have found it under pieces of bark lying on sawdust, in a long disused sawmill.

Dictyoptera fiedleri
This is a central European insect. I have no information on the species, except that it is found in old forest.

Homalisus fontisbellaquei
A continental species reaching the Paris basin, where it occurs in old forests such as Fontainebleau, from whence its name is derived. It is associated with old Fagus and Quercus.

Lygistopterus sanguineus
A continental species which reaches northern France, but is not recorded from the British Isles. It is primarily associated with dry, rotten wood and tree humus in dead, standing and fallen Fagus and Quercus and the larvae live together in groups, within the wood. I have found the adult beetle in tree humus, in the large trunk cavity of a still-living, hedgerow Fraxinus.

Platycis cosnardi
This species reaches the atlantic coast of Europe and there are two isolated records from southern England, where the species is regarded as endangered (Shirt, 1987). It is confined to old forests, where it is found in trunk cavities of ancient Fagus.

Platycis minutus
This species reaches England, where it is recorded from a few widely dispersed sites. It is associated with old deciduous trees of various spcies, including Alnus, Fagus, Populus and Tilia and has also been recorded from conifers. It occurs in trunk cavities and stumps.

Pyropterus nigroruber

This is the only lycid known from Ireland. On the continent it is regarded as a montane and northern species. It is associated with conifers, Betula and Quercus, but also found in the rotten wood of other deciduous trees. From what I have seen of them, the larvae live colonially, in well-rotted wood which has been subject to the attentions of brown-rot fungi. The larvae were found in twos and threes in small chambers in the wood and there was no sign of cannibalism over the two or three months that I had them. Just prior to pupation they gathered into larger groups, upwards of twelve larvae pupating together in one chamber. Hatching of the adults was not synchronous, but occurred over a period of two weeks. According to many authors (e.g. Harde, 1984), lycid larvae are predatory, but the log from which I reared P. nigroruber did not seem to contain larvae of any other beetle species, or larvae of other insects. Crowson (1981) suggests lycid larvae are not predatory, but points out that they digest their food extra-somatically, by means of enzymes they secrete via the mouthparts, and only ingest liquid food. As he says, there is clearly need for more incisive investigation of their food and feeding habits. The adult beetle may be found under the bark of rotten logs or on flowers. Lycids, including P. nigroruber, are fully flighted, and can be encountered on the wing, during warm, still conditions.

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DEVELOPMENT AND PRESENT VEGETATIONAL STATE OF BOOTERSTOWN MARSH, CO. DUBLIN, IRELAND.

Julian D. Reynolds and Sylvia C. P. Reynolds

Astract

Habitat descriptions and lists of plants occurring at Booterstown marsh, Co. Dublin, Ireland, today or in the past indicate that the diversity and distribution of fresh, brackish and saltwater vegetation has not changed markedly over the past 20 years. Most species known from the site since 1900 still grow there, including the protected grass Puccinellia fasciculata. A conservative management policy is suggested.

Introduction

For several hundred years, the shoreline around Dublin has been gradually changing under man's influence. Booterstown marsh (O2030) was formed over 150 years ago when the new Dublin to Kingstown Railway in 1834 cut across a shallow sandy bay between Blackrock and Merrion. Here two small streams (Elm Park and Trimleston/St. Helens) entered the sea; these streams were redirected into a somewhat saline ditch along the railway, debouching at low tide through a flap valve built into a stone sluice at Williamstown, 500m south-east of Booterstown station. Subsequent reclamation of either end of the residual strip of marshland reduced the site to something like its present form (fig. 1).

During both World Wars much of the marsh was drained and cultivated, restricting but not eliminating the influence of inflowing streams and saline ditch. When the allotments fell into disuse, marsh vegetation gradually reclaimed the arable land. In the 1950s and 1960s, land was further infilled at both ends of the marsh, a car park was constructed at the south-western corner,

while the Trimleston stream was culverted along the northern edge of the marsh, to discharge directly to the sea (Goodwillie, 1986).

In 1969 most of the marsh was leased to An Taisce, the National Trust for Ireland, for educational purposes and the conservation of birds, plants and animals, and around the same time a detailed survey was made of its biological characteristics (Goodwillie et al., 1971). Booterstown marsh, now the only area of brackish wetland in south Co. Dublin, is listed as a site of local importance for its vegetation and birdlife (Anon. 1981). However, in recent years there have been fears that the marsh was increasing in salinity and that the flora and birdlife were becoming impoverished. There was also public concern about pollution from oil and sewage in inflowing streams. A major controversy developed in 1988 over plans to build roads across the marsh and between it and the sea. In the same year the lessees commenced a phase of active management in which a drain was dug across the marsh, trees were planted, and in 1989 a sluice-gate was inserted at the station end of the marsh. This was followed by dramatic alterations in both wetness and salinity (Rochford, in prep.).

Botanical observations on plants of the coastline between Blackrock and Dublin have been published by Threlkeld (1727) and Wade (1794). Colgan (1904) listed Booterstown plants in his detailed Flora of the County Dublin. These early records are summarised in Table 1. Little information has since been published, although many detailed reports have been compiled on its fauna and flora (e.g. Goodwillie, 1986; Goodwillie et al., 1971; Reynolds, 1988). In view of recent changes it now seems a suitable time to review the vegetational status of the marsh in the light of its history.

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Description of the site and its vegetation

The rectangular marsh, its long axis lying NW-SE, parallel to the coastline, today measures approximately 4.3ha (Fig. 1). A shallow pond close to the road frontage lies parallel to a saline drainage ditch by the railway into which the Elm Park stream flows. Between these the terrain is ridged, a relic of the former allotments. Because of the gentle gradient, almost the entire marsh may be flooded at irregular intervals. Salinity of the water is generally least at the north-western corner, where the culverted Trimleston stream leaks, and the south-western corner, where there is some freshwater seepage from beneath the car-park, and greatest in the saline ditch and at the south-eastern corner by the railway station. However at all sites it fluctuates under the influence of tidal cycles and rainfall (Rochford, in prep.).

The vegetation description and annotated list of plant species presented here are based on surveys made from 1985 to 1987 by Sylvia Reynolds and the late Dr Helen O'Reilly as part of the Dublin Naturalists' Field Club's work towards a new Flora of County Dublin, and more frequent visits in 1988 and 1989 to establish seasonal patterns. Nomenclature follows Scannell and Synnott (1987). The description concentrates on the wetland vegetation of the marsh; marginal terrestrial vegetation, occasional species such as *Sonchus oleraceus* and *Senecio jacobaea* found scattered over the site, and weedy species on the low mound of spoil in the middle of the marsh, are not further considered. The marsh itself is divisible into four main habitats: the freshwater corners (NW and SW), the pond, the former allotment flats and an area of saltmarsh extending along the saline ditch from the station (SE) corner. Transitional vegetation occurs between each habitat (Fig. 1).

Freshwater corners

Seepage from or near the culverted Trimleston Stream in the NW

corner (visible in winter when plant cover is reduced) supports a dense and luxuriant vegetation. Dominant species are Nasturtium officinale sensu stricto, Apium nodiflorum, Polygonum amphibium, Equisetum fluviatile and Epilobium hirsutum. Other characteristic species include Filipendula ulmaria, Angelica sylvestris, Cardamine pratensis and Carex otrubae with Triglochin palustris, Myosotis laxa and Alopecurus geniculatus forming a lower community towards the pond. The area just to the south supports a dense growth of E. fluviatile, E. hirsutum and Juncus inflexus merging with Scirpus maritimus and Juncus gerardi. In late summer much of this area is overgrown by a tangle of Calystegia sepium.

Both to the east and south of this freshwater corner, vegetation is more terrestrial in character. To the east, the northern margin close to the culvert is rather dry, with Clematis vitalba, Rubus fruticosus agg., Calystegia sepium, Festuca arundinacea, F. rubra, Potentilla anserina, Arrhenatherum elatius, Poa trivialis, Plantago lanceolata, Epilobium hirsutum, Urtica dioica, Lathyrus pratensis and Cirsium arvense. To the south along the edge of the marsh below the road bank there is damp grassland vegetation including Agrostis stolonifera and Potentilla anserina, some well-grown Salix cinerea ssp. oleifolia and occasional Leontodon autumnalis, Carex hirta, C. nigra, C. disticha and Glyceria plicata, the last two seen only in 1985.

The vegetation in the freshwater SW corner is less luxuriant than that in the NW corner, and species composition is different. Festuca arundinacea, Epilobium hirsutum, E. parviflorum, E. obscurum, Juncus articulatus, Rumex conglomeratus, Nasturtium microphyllum and Apium nodiflorum merge with species tolerant of some brackish influence, such as Carex otrubae, Rumex crispus, Festuca rubra, Agrostis stolonifera and Ranunculus sceleratus. These in turn mingle with a group of plants requiring a saline

influence, such as Glaux maritima, Carex distans, Scirpus maritimus, S. lacustris ssp. tabernaemontani and the protected grass Puccinellia fasciculata. In one place, Triglochin palustris and T. maritima grow together.

Pond

Apart from Lemna minor there are no true aquatic plants in the pond, most of which is extremely shallow (under 10cm) over flocculent mud. The dominant species fringing the pond all year round is Scirpus maritimus, with scattered patches of Scirpus lacustris ssp. tabernaemontani. There is abundant Ranunculus scleratus, particularly on the eastern side (conspicuous in flower in June), and some Juncus ranarius.
Enteromorpha sp. was seen sparingly on the pond in July 1989; this alga occurs in both freshwater and brackish situations elsewhere in Co. Dublin.

Allotment flats

The allotment flats show marked seasonal changes in plant cover and dominance; they also contain the main stands of Puccinellia fasciculata. In June 1989 Juncus gerardi, Spergularia marina and P. fasciculata were conspicuous, the latter growing in open areas or where other vegetation at this time of the year is only a few centimetres high. By July, J. gerardi was less obvious and grasses were dominant, particularly Agrostis stolonifera and Elymus repens. Poa trivialis and Holcus lanatus were scattered throughout this area, as were Rumex crispus and Matricaria maritima.
In August and September, Aster tripolium became dominant throughout the flats, with much Atriplex prostrata, E. repens and A. stolonifera and, where earlier in the year there was open mud, abundant Salicornia europaea. Well-grown plants of Halimione portulacoides occupy a restricted area of the flats, about 12m west of the saline ditch.

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Saltmarsh

In the SE corner along the saline ditch, the brackish allotment vegetation intergrades with patches of bare mud and a restricted area of saltmarsh. In the saltmarsh, particularly towards the SE corner, there is abundant low-growing Glaux maritima, Spergularia marina and Salicornia europaea, with scattered plants of Puccinellia fasticulata, P. maritima, Juncus gerardi and Aster tripolium. In 1989, some Salicornia dolichostachya was found growing with S. europaea. The saltmarsh is bordered on the south by extensive stands of Scirpus maritimus. On the marsh (west) side of the saline ditch are dense mats of P. maritima and, on the railway side, Apium graveolens, Beta vulgaris ssp. maritima and A. tripolium. Suaeda maritima was found by Dr Helen O'Reilly, beside the station in 1985, but this area is now overgrown with Agrostis stolonifera and other plants.

Distribution and present status of Puccinellia species at Booterstown.

A feature of the vegetation of Booterstown marsh is the presence of three species of saltmarsh-grass, Puccinellia maritima, P. fasciculata and P. distans, all known in south Co. Dublin for nearly a century. Although P. fasciculata and P. distans are character species in the alliance Puccinellio-Spergularion salinae Beeftink 1965, P. maritima may also be a major constituent of communities within this alliance (Gray and Scott, 1977; White and Doyle, 1982). In 1989 it was noted that each species appeared to prefer a different habitat on Booterstown marsh, with relatively little overlap except where habitats were contiguous.

P. maritima is the common grass of saltmarshes and a major winter food of herbivorous wildfowl (Gray and Scott, 1977). It was locally abundant in south Co. Dublin one hundred years ago (Colgan, 1904), and today forms dense mats in the flats close to

the saline ditch and in the fringes of the saltmarsh.

P. fasiculata is one of the 68 plant species protected, with its habitat, under the Wildlife Act (Flora Protection Order of 1987). At present, it is only known from two locations in Ireland and is apparently declining for reasons unknown (Curtis and McGough, 1988). This species was known to Colgan along the saline ditch by the railway near Booterstown and was not recorded again until its rediscovery in 1971 by Con Breen (Specimen in National Herbarium, Glasnevin). It was noted again in May 1988 growing vigorously over part of the allotment flats. It is most common among low growing vegetation and on open mud, which may be factors required for its continued success. In 1989, hundreds of plants were seen, sometimes in pure stands. Scattered, mainly young, plants were also seen elsewhere in the flats, saltmarsh, at the edge of the pond, and along the 1988 drain both towards the saline ditch and into the SW corner. No plants occurred in the densely vegetated freshwater (NW) corner.

On the flats, flowering P. fasciculata was most commonly found in monospecific stands on mud or among low vegetation, especially Spergularia marina and young plants of Aster tripolium, Atriplex prostrata and Salicornia spp. It was not found among larger Aster plants nor in stands of Juncus gerardi. A few erect plants, almost a metre in height, occurred in the fringes of the Scirpus maritimus stands east of the pond; elsewhere it was normally procumbent.

A plant of drier shoreline habitats, P. distans is the least common saltmarsh grass at Booterstown and was not recorded in this survey before 1988. Colgan (1904) found P. distans along the railway between Blackrock and Booterstown. In 1988 and 1989 it was chiefly confined to the raised bank of the 1988 drain just east of the pond, with a few scattered plants in the allotment flats and

towards the saltmarsh.

Discussion

Colgan (1904) recorded a number of plants from Booterstown, all brackish in nature, several of which were known from marshy places near the sea before the creation of Booterstown marsh. All still grow today in the remnant of marsh which has not been reclaimed. Engineering works have for over 100 years allowed periodic incursions of seawater onto the marsh, and both Colgan (1904) and Goodwillie et. al. (1971) noted that Spergularia marina grew there abundantly on low grounds inundated by high tides. We have no early records of freshwater plants from Booterstown, probably because wetland habitats were then more widespread around Dublin and such species would not have been specifically noted from the area.

Reports since 1970 have tended to emphasise the recent development or expansion of saltmarsh at Booterstown at the expense of freshwater vegetation and since the mid 1980s there has been concern that the flora was becoming impoverished and the marsh degraded (Goodwillie, 1986). Concern about the flora was based on a comparison of plant lists compiled 1982 and 1985 by members of the plant group of the Dublin Naturalists' Field Club with a more detailed survey in 1970 (Goodwillie et al. 1971). However, comparison of the 1970 records with plant records from the marsh presented in this present paper (excluding species of the surrounding banks and casual species on the marsh) show how little the distribution of most plants has changed after nearly 20 years. Forty of the same species were found both in 1970 and 1989. Ten species seen in 1970 have not so far been refound (Appendix) and 16 species have since been added, equally divided between those preferring freshwater and saline habitats. Of the 10 species not refound, several grew west of the pond and the most likely reason for their disappearance is the incursion of terrestrial vegetation

between the roadside bank and the pond. Vigorous growth of species such as Apium nodiflorum and Nasturtium officinale in the NW freshwater corner may also have swamped lower growing plants. In 1970 it was noted that some species, e.g. Alisma plantago-aquatica, Samolus valerandi and Hippuris vulgaris, occurred only in small numbers, so they may already have been responding to earlier changes on the marsh. It is less easy to explain the absence of Zannichellia palustris which is tolerant of both eutrophic and slightly brackish water.

As in many wetland habitats, seasonal changes in the vegetation are a striking feature of Booterstown marsh and must be borne in mind when comparing plant records. Seasonal progression of plants is particularly visible on the flats where Juncus gerardi and Puccinellia fasciculata are conspicuous in early summer. As they die back, the grasses Agrostis stolonifera and Elymus repens become more evident. In the saltmarsh Glaux maritima and Spergularia marina are most conspicuous when they are in flower early in the year. By the end of the summer, the most obvious plant on the flats and saltmarsh is Aster tripolium in flower. There are also seasonal changes in the amount of exposed mud on the marsh. Thus, while Goodwillie (1986) reported extensive bare mud in May of that year, relatively little bare mud was noted in July, either in 1970 (Godwillie et al. 1971) or in 1989 (this survey).

There have been some longer-term changes of interest. Salicornia had been known between Ringsend and Blackrock (Threlkeld, 1727) but Colgan (1904) described it as very rare south of the Liffey, and apparently confined to the South Wall. Colgan also states that Halimione, also known around Dublin since the 18th century, in 1902 only occurred south of the Liffey at Killiney. In the past 20 years both Salicornia and Halimione have become established on Booterstown marsh. Should the latter become widespread, it may

eventually come to dominate the vegetation of much of the marsh, as at Bull Island.

Recently two management actions have led to change on the marsh. In 1988 a dyke with associated banks and side drains was dug across the allotments, connecting the pond to the saline ditch. These drains may speed the removal of freshwater off the allotment flats and carry saline water at high tides directly into the pond area. In early 1989, a sluice was constructed near the station at the SE corner outflow, designed to control the entry of saline water to the marsh from the Williamstown pond. During the dry weather of early summer in 1989 the marsh mud became dry and cracked, and after rain, some standing water was highly saline (J. Rochford, pers. comm.). These effects were somewhat mitigated in summer when the sluice was fixed permanently open.

In conclusion, the marsh today shows an unusual mixture of fresh, brackish and saltwater vegetation, and is the only such site in south County Dublin. It contains a number of plants unknown elsewhere in Dublin south of the Liffey, including one protected species. Several of these plants have long been known from Booterstown. Site management should be conservative, and will require precise and careful manipulation to retain the present diversity of flora.

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TABLE 1: Early plant records from Booterstown and adjacent areas of Dublin Bay.

All but one of these species are still growing on Booterstown Marsh.

Apium graveolens : in drains by the railway at Booterstown in 1894 (Colgan, 1904).

Aster tripolium : at the Black-rock (Threlkeld, 1727).

Beta vulgaris : in Dublin Bay (Threlkeld, 1727).

Glaux maritima : near the mouths of Dublin streams (Threlkeld, 1727); very rare in SE Co. Dublin; in fair quantity by the salt ditch near Booterstown railway station (Colgan, 1904).

Juncus gerardi : sparingly by the salt ditch between Booterstown and Blackrock (Colgan, 1904).

Oenanthe lachenalii : in ditches and marshes about Sandymount and Merrion (Wade, 1794); considered extinct by Colgan (1904).

Puccinellia distans (as Glyceria distans) : by the railway between Blackrock and Booterstown (Colgan, 1904).

Puccinellia fasciculata (as Glyceria Borreri) : by the salt ditch along the railway near Booterstown (Colgan, 1904).

Salicornia europaea (as S. herbacea) : mid-way between Ringsend and the Black-rock (Threlkeld, 1727).

Scirpus maritimus : marshes by the sea between Sandymount and Merrion (Wade, 1794; Colgan, 1904).

Spergularia marina (as S. salina) : along salt ditches at Booterstown (Colgan, 1904).

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APPENDIX: Annotated check list of wetland plants on Booterstown Marsh.

Fifty-six plants (excluding casual species) seen in a series of visits to the site between 1985 and 1989 are listed, with an indication of their present distribution. Records in parentheses are for plants on Goodwillie's (1971) list not since refound; * : plants recorded since Goodwillie et al. (1971); (DR): only known station in south Co. Dublin. Nomenclature follows Scannell and Synnott (1987).

Agrostis stolonifera : widespread; abundant on flats.
(Alisma plantago-aquatica : a few plants west of pond)
Alopecurus geniculatus : sparingly in NW and along northern edge.
Angelica sylvestris : freshwater corners.
Apium graveolens : mainly along saline ditch (DR).
A. nodiflorum : freshwater corners, abundant in NW.
Aster tripolium : very common on flats and saltmarsh.
Atriplex prostrata : very common on flats and west of pond.
* Beta vulgaris ssp. maritima : mainly along saline ditch.
Calystegia sepium : freshwater corners.
* Cardamine pratensis : sparingly in NW freshwater corner.
Carex distans : sparingly in SW corner.
* C. disticha : sparingly west of pond in 1985.
C. hirta : sparingly west of pond.
* C. nigra : sparingly on NW side of pond.
C. otrubae : mainly western and northern sides.
Elymus repens : widespread.
Epilobium hirsutum : abundant, freshwater corners and west of pond.
* E. obscurum : SW corner.
E. parviflorum : SW corner.
Equisetum fluviatile : abundant in NW freshwater corner.
Festuca arundinacea : SW corner and northern margin.

F. rubra : SW corner and northern margin.
Filipendula ulmaria : NW freshwater corner.
(Galium palustre : pond, especially west side)
Glaux maritima : very common on flats and saltmarsh (DR).
* Glyceria plicata : sparingly west of pond in 1985.
* Halimione portulacoides : flats along saline ditch and SE corner.
(Hippuris vulgaris : one colony NE corner of pond)
* Holcus lanatus : scattered mainly over flats.
(Hypericum tetrapterum : west of pond)
(Iris pseudacorus : one colony on railway bank)
Juncus articulatus : SW corner.
J. gerardi : widespread; abundant on flats.
J. inflexus : NW corner and west of pond.
J. ranarius : sparingly east of pond and NE corner.
Lemna minor : pond and open water at NE corner of flats in 1989.
Leontodon autumnalis : occasional west of pond.
Matricaria maritima : flats, chiefly northern end.
(Mentha aquatica : west of pond)
Myosotis laxa ssp. caespitosa : sparingly in NW corner.
(Nasturtium hybridum : near culvert)
* N. microphyllum : much in SW corner.
N. officinale s.s. : abundant in NW freshwater corner.
* Plantago coronopus : occasional on flats.
* Poa trivalis : flats and pond fringe.
Polygonum amphibium : abundant in NW freshwater corner.
Potentilla anserina : west of pond and along northern margin.
* Puccinellia distans : banks of new drains and sparingly on southern flats.
* P. fasciculata : frequent on flats (DR).
P. maritima : flats near and along saline ditch.
Ranunculus sceleratus : around pond, chiefly eastern side.
Rumex conglomeratus : SW corner.
R.crispus : scattered over flats.

* Salicornia dolichostachya : sparingly on flats and saltmarsh (DR).
* S. europaea s.s. : abundant on flats and saltmarsh.
(Samolus valerandi : rare, west of pond)
Scirpus lacustris ssp. tabernaemontani : around pond, also southern and northern ends of marsh (DR).
S. maritimus : abundant around pond and both ends of marsh, occasional elsewhere (DR).
Spergularia marina : very common on flats and saltmarsh.
* Suaeda maritima : beside station SE of saline ditch in 1985; habitat now overgrown (DR).
Triglochin maritima : sparingly in SW corner (DR).
Triglochin palustris : sparingly in NW and SW corners.
Typha latifolia : young plants by drain at southern end of marsh in 1989.
(Veronica beccabunga : by culvert)
(Zannichellia palustris : pond, especially E side)

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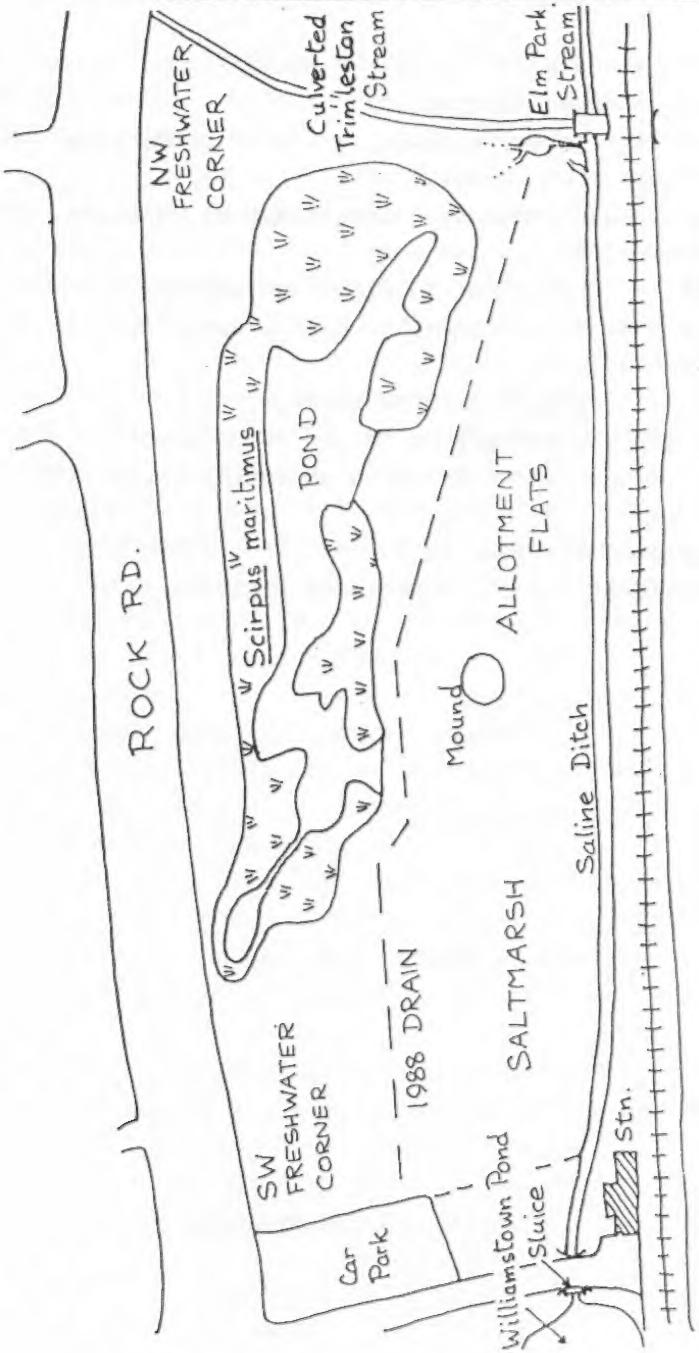
FIGURE 1. Sketch Map of Booterstown Marsh in 1989, after Rochford (in prep.), showing Features Mentioned in the Text.



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RECENT AND FOSSIL MOLLUSCA OF THE RIVERS BARROW, NORE AND SUIR, SOUTH-EAST IRELAND.

Nora McMillan and Hildegard Zeissler

Synopsis

The molluscan fauna, Recent and fossil, of the rivers Barrow, Nore and Suir (SE Ireland) is listed and commented upon. The important presence of Viviparus viviparus (L.) is noted. The paper is largely based upon R. A. Phillips and A. W. Stelfox's unpublished work.

Introduction

The molluscan fauna of good-sized rivers is among the least-known by reason of the physical difficulties of investigating it. The present paper is offered as a contribution to our knowledge of the molluscan fauna of three rivers in SE Ireland, and also to draw attention to the fossil shells of unknown age dredged from all three rivers.

History

Some years ago the late A. W. Stelfox gave NMcM a quantity of molluscan shells and unsorted material from dredged sands obtained from the rivers Barrow, Nore and Suir. These enigmatic sands have yielded Viviparus viviparus (L.) (29 specimens known), otherwise almost unknown in Ireland (McMillan and Stelfox, 1962); apart from this nothing has been published upon these sands. There is no mention of them in Kennard and Woodward's (1917) paper on the post-Pliocene Mollusca of Ireland.

From 1913 onwards Phillips collected shells from these dredged sands and tried to persuade Kennard to study them but unfortunately neither Phillips himself nor Kennard ever published anything about the sands and their molluscan fauna.

Stelfox, who had material from Phillips and also collected some himself, was always interested but never had time to do more than to list the species present in his samples. In 1960, he gave NMcM his material together with notes and lists of species; these form the basis of the present paper together with notes and determinations made in 1960 by NMcM from Phillips' material in the National Museum of Ireland, Dublin. A few records taken from Phillips' letters to Stelfox (Phillips ms.) have been included. HZ is responsible for the determination of Stelfox's unsorted material.

The three rivers Barrow, Nore and Suir together drain a large part of SE Ireland; the two former join about two miles above New Ross and eventually, with the Suir, discharge into Waterford Harbour, the drowned estuary of all three rivers.

When Phillips was collecting this material, quite an extensive trade in sand for building purposes was carried on at Waterford and New Ross. This sand was dredged by local boat-men from the Suir and Barrow respectively, in all cases so far as we are aware (Phillips and Stelfox, pers. comm.) well above the towns mentioned. That landed on the Waterford quays came mostly from Fiddown (Co. Kilkenny) on the Suir, some fifteen to twenty miles upriver from Waterford, and that on the New Ross quays came from the Barrow almost as far as St. Mullins, seven miles upriver. Phillips also gathered shells from sand dredged below New Ross; here the water was brackish and Phillips remarked (in litt. 23.iii.1916) that "this would account for the Recent shells in it being mostly Pal. jenkinsi (i.e. Potamopyrgus jenkinsi)".

Phillips gathered his shells from these sand heaps and though he was careful to keep the different lots separate, obviously shells of various ages must have been included in each lot. The differing condition of the shells is well shown by the fresh specimens of P.

jenkinsi (Smith) and the old look of most of the Pisidium valves which are stained brown-purple or orange.

List of Mollusca obtained

(Names follow Kerney (1976)).

The Barrow list is based mainly upon Phillips' numerous gatherings about New Ross from 1913 onwards. He was careful to specify whether the material was taken from Barrow or Nore sand. The Nore list is based upon New Ross material collected in 1913, and also from near Inistioge (Co. Kilkenny) in 1917. Also material from the mouth of the Nore where it joins the Barrow, 1921 (Stelfox). The Suir list is based upon Phillips' material from Fiddown (where the river separates the counties Waterford and Kilkenny) collected May-June 1913, Jan. 1916, March 1917 and undated material. Also specimens from the river near Waterford, March 1914, and near Clonmel, June 1916.

SPECIES	Barrow	Nore	Suir
Theodoxus fluviatilis (L.)	X	X	X
F - Viviparus viviparus (L.)	X	-	X
Valvata cristata Müller	X	X	X
V. piscinalis (Müller)	X	X	X
F - Hydrobia ventrosa (Montagu) agg.	X	-	-
Pseudamnicola confusa (Frauenfeld)	X	X	X
Potamopyrgus jenkinsi (Smith)	X	X	-
Bithynia tentaculata (L.)	X	X	X
B. leachii (Sheppard)	X	-	-
Aplexa hypnorum (L.)	X	-	-
Physa fontinalis (L.)	X	X	X
Lymnaea truncatula (Müller)	X	X	X
L. palustris (Müller)	X	X	X
L. auricularia (L.)	X	X	X
L. peregra (Müller)	X	X	X
Planorbis planorbis (L.)	X	X	X

	P. carinatus Müller	X	-	-
	Anisus leucostoma (Millet)	X	X	X
	Bathyomphalus contortus (L.)	X	X	X
F -	Gyraulus laevis (Alder)	-	-	X
	G. albus (Müller)	X	X	X
	Armiger crista (L.)	X	-	X
	Ancylus fluviatilis Müller	X	X	X
	Margaritifera margaritifera (L.)	X	X	X
	Sphaerium corneum (L.)	X	X	X
	Pisidium amnicum (Müller)	X	X	X
	P. casertanum (Poli)	X	X	X
	P. personatum Malm	-	-	X
	P. obtusale (Lamarck)	X	X	X
	P. milium Held	X	X	X
	P. subtruncatum Malm	X	X	X
F -	P. supinum Schmidt	-	-	X
	P. henslowanum (Sheppard)	X	X	X
	P. hibernicum Westerlund	-	-	X
	P. nitidum Jenyns	X	X	X
	P. moitessierianum Paladilhe	X	X	X
	P. pulchellum Jenyns	-	-	X

F = taken as fossils only.

Margaritifera margaritifera: The specimens listed above are all of the form durrovensis Phillips, 1928.

Very many of the species listed comprise numerous fossil shells distinguished by their brown-purple or orange-brown colour and old appearance as well as fresh Recent shells of the same species. "fossil" is used as a convenient term and the shells are not assigned to any particular age; merely they are not Recent. Stelfox commented that the Pisidium shells were thick and of unusual forms.

Four species have been taken only as fossils, namely V. viviparus (in the Barrow and Suir), Gyraulus laevis (Alder) (in the Suir), Pisidium supinum Schmidt (in the Suir) and Hydrobia ventrosa (Montagu) agg. (Barrow only). Also the well-marked form matritensis Graells, 1846, of Bithynia tentaculata (L.) (in Barrow and Suir).

Notes on some of the species

Viviparus viviparus (L.): for a fuller account of these important specimens see McMillan and Stelfox (1962). Altogether twenty-eight shells have been obtained from the river Suir and one from the Barrow (at St. Mullins, Co. Carlow). Otherwise almost unknown in Ireland.

Hydrobia ventrosa (Montagu) agg.: Phillips (in litt. 15.iii.1916) notes that although he took H. ventrosa (the aggregate species as H. neglecta Muus was not then recognised) in the Barrow, he failed to find living specimens. The Barrow shells are both worn and variable but all seem referable to H. ventrosa agg.

Potamopyrgus jenkinsi (Smith): only fresh and obviously recent shells were present.

Bithynia tentaculata (L.): fossil shells of this species from Barrow sand at Tinnahinch, Co. Carlow, and in Suir sand also, were named by Kennard matritensis Graells, 1846. This is an elongate form regarded as a species by some workers but by Ellis (1969, p. 82) treated as a variety only. A strikingly obese form also occurred among the fossil shells from the Suir.

B. leachii (Sheppard): in New Ross dredged sand, 1916 (Stelfox). In 1915 or 1916 Phillips took "one or two specimens in drift on the Barrow foreshore about a mile above New Ross".

Lymnaea palustris (Müller): the form turricula Held has been treated as a species by some workers, and shells referable to it have been identified among the Suir material. Jackiewicz (1959), investigating the variability of L. palustris, described a new species occulta and this has also been recognised in the Suir

shells.

Gyraulus laevis (Alder): only found fossil (9 shells in sand dredged from the Suir at Fiddown, Co. Kilkenny). It is a common species in the Late-Glacial marls which often underlie Irish bogs (e.g. the White Bog, Co. Down; Stelfox et al., 1972), but is now a much diminished species and nowhere at all common.

Margaritifera margaritifera durrovensis Phillips: described as a new species by Phillips (1928) from the Nore at Durrow, Queen's County (now Laois), this is now considered merely a hardwater form of the species (Haas, 1948); it was represented by young dead valves in sand dredged from the Barrow in Co. Carlow and a shell in the Suir at Clonmel, July 1928 (Halbert fide Stelfox, 1929).

Pisidium spp: unsorted material from the Barrow c. a mile below the bridge, New Ross, coll. 17.ix.1921, yielded Pisidium specimens in considerable numbers. eight species were present and are here listed in order of abundance:-

Pisidium casertanum (Poli): abundant; P. nitidum Jenyns: abundant; P. obtusale (Lamarck): almost as abundant; P. subtruncatum Malm: almost as abundant; P. moitessieranum Paladilhe: fairly plentiful; P.henslowanum (Sheppard): scarce; P. milium Held: scarce; P. amnicum (Müller): rare.

In every case nearly all the valves were old-looking, thickened, and of the peculiar purple-brown or orange colour already commented upon. Phillips (1916) remarked that P. parvulum Clessin (now P. moitessierianum) was abundant in the Barrow sands about New Ross and also near Graiguenamanagh and that the specimens "were mostly of a reddish or chocolate colour and look as if washed out of a very old deposit".

Pisidium supinum Schmidt: frequent as a fossil in the Suir sands accompanied by thickened and triangular forms of P. amnicum (Phillips, 1916 p. 102). Otherwise not known in Ireland, either fossil or Recent, though widely distributed in Europe and in the eastern half of England (Kerney, 1976). Phillips (in litt. 26.ix.1919) describes how he tried to find P. supinum, P. parvulum

(now P. moitessierianum) and the triangular form of P. amnicum in situ in the Suir. "Four of these days were occupied in searching the Suir for the characteristic sand shells. I worked many places on each side of the river from Carrick [-on-Suir] to Clonmel some twelve miles but could not find either P. parvulum, supinum, or the triangular P. amnicum".

P. clessini Neumayr ?: mention must be made here of a single valve rom the Suir sand considered by Phillips to be P. astartoides Sandberger (now P. clessini), a Pleistocene species. Phillips referred to it (in litt. 2.xii.1917 to Stelfox) and the relevant part of his letter is reproduced here for its interest "Meanwhile I send for your inspection a valve which I take to be astartoides from the Suir deposit. I found it when comparing Overton's shell with some of the triangular amnicum. It seems to me to be identical, interiorly, with B. B. W.'s diagrammatic enlargement, Pl.xii, f.3, and exteriorly with the Grays shells illustrated on Pl.x. It is not in the least like any of the other associated forms of amnicum and the ridges are further apart and run higher up the umbone than is usual in that species. The base of C2 seems to run across the top of AII as in parvulum, a feature which appears in B. B. W.'s diagram". Most unfortunately this important specimen (if correctly named by Phillips) is not mentioned elsewhere by either Phillips or Stelfox, and efforts to trace its present location have failed.

Discussion

The Mollusca of rivers fall naturally into three groups, a) the true inhabitants of the river, b) strays washed in from tributary streams or flooded pools, and c) shells derived from deposits of various ages, reworked by the river. In addition, many terrestrial species are often abundant in flood-debris. Such terrestrial species are irrelevant to our present inquiry although lists of the species obtained will be passed to the appropriate quarter in due course.

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All three of the above catergories are present in the Mollusca of the rivers Barrow, Nore and Suir, as well as numerous landshells and the amphibious Succinea putris (L.), and Oxyloma pfeifferi (Rossmässler).

Boycott (1936, p.173) has pointed out that rivers as a class are not very good habitats. Even if calcareous the current may be too fast, the quiet places too deep, and the shallow places too rapid. Additionally, they are liable to be scoured by periodical floods. In view of these facts the number of freshwater species here recorded from the lower reaches of these three rivers (34 in all; 30 spp. in the Barrow, 25 in the Nore, and 31 in the Suir) is understandable. Aplexa hypnorum (L.), Lymnaea truncatula (Müller) and Pisidium personatum Malm though present in small numbers are obvious strays from their normal habitat of small pools or trampled wet places, and are not included in the above totals. The fossil species, however, have been included.

Phillips (1916) has given a good account of how the greater rivers of the south of Ireland have large deposits of sand and clay accumulated in them. Such deposits contain a mixture of sand and shells of various ages,and from them Phillips collected his material. The main interest of these Irish sands is the presence of Viviparus viviparus otherwise almost unknown in Ireland. The sands have also yielded a suite of species which although occurring at the present time (as shown by fresh Recent specimens) are also represented by specimens unlike their modern representatives. These older shells are often thicker and heavier and of a peculiar colour as already mentioned. Referring especially to the Pisidium spp. Stelfox (in litt. 1960) commented "those browny-purplish valves are very like those from Thames Pleistocene deposits and I feel sure are inter-glacial".

To summarise, therefore:-

1. The rivers Barrow, Nore and Suir have each yielded a suite of molluscan species comprising not only fresh Recent shells but also fossil representatives of the same species.
2. Two of the rivers (Barrow and Suir) have yielded fossil shells of Viviparus viviparus otherwise almost absent from the Irish fauna.
3. The Suir also yielded fossil specimens of Pisidium supinum not known as a Recent species in Ireland.
4. The fossil shells are distinguished by the ferruginous or orange colour and general "old" look. Shells of the numerous Pisidium species are of the same unusual colour, and some of the species are strongly triangular in outline unlike their Recent representatives of the same species.
5. In our present state of knowledge it is impossible to date these fossil shells, but it has been suggested by Stelfox (1929, p. 9) that they are inter-glacial (Pleistocene). If Phillips' specimen of supposed Pisidium astartoides (now P. clessini) could be located and identification confirmed this would be an important step towards a dating of these shells.

All the Stelfox material used in this account is in the possession of NMcM. and will eventually be deposited in an appropriate museum. The Phillips material is in the National Museum of Ireland, Dublin.

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HIPPODAMIA 13-PUNCTATA (COLEOPTERA: COCCINELLIDAE) AND OTHER INSECTS FROM ALL SAINTS BOG, CO. OFFALY, IRELAND.

Martin C. D. Speight

I was surprised to discover that Majerus (1989) and Majerus and Kearns (1989) regard the ladybird Hippodamia tredecimpunctata (L.) as extinct in Great Britain - in Shirt (1987) it is listed as "rare" in Great Britain, the lowest category of threat recognised using IUCN definitions. However, on contacting Declan Doogue, who has been gathering distribution data for Irish ladybirds, I discovered that he has seen no Irish material of this species additional to the specimens in the collections of the National Museum of Ireland. The National Museum holds only specimens mentioned by Johnson and Halbert (1902). In the circumstances I conclude it is worthwhile to put on record a recent Irish occurrence of H. 13-punctata.

I have included here whatever information I have been able to glean about this species and also a species list for the locality from which it was collected, because the site concerned, All Saints Bog, is proving to possess an unusual fauna, to which I feel attention might usefully be drawn.

Hippodamia tredecimpunctata (L.)
Offaly: 14.ix.1988, N0010 (NU3) All Saints Bog, swept in some numbers, Molinia, Carex and small Betula (c.1m tall) along edge of Betula/Pinus sylvestris woodland on valley bog, coll. and det. MCDS. (One of these specimens has been deposited in the NMI collections).

There is little information about this distinctive ladybird in Ireland. Johnson and Halbert (1902) record it from Antrim, Armagh, Down, Dublin, Galway, Kerry, Roscommon and Waterford, in the 19th

century, but there do not seem to be recent records, other than that from All Saints Bog referred to above. While I have not been systematically surveying coccinellids, I can say that I have not encountered H. 13-punctata except at All Saints Bog, despite the fact that I have visited a wide range of different wetlands in various parts of the island, during the course of insect survey work. It is perhaps worth noting that E. F. Bullock, that assiduous collector of beetles in Co. Kerry, has no H. 13-punctata in his collection (now in NMI), either. If H. 13-punctata is extinct in Great Britain, it is the only coccinellid which has become extinct there during the present century. But even if it still survives there, it would seem to be the most threatened of the British ladybirds. On the continent this insect is widely distributed. Stanek (1984) mentions that it is found throughout Europe south to the Caucacus and north to Siberia. From the information in Sainte-Claire Deville (1937), H. 13-punctata evidently occurred in mountainous districts throughout France until well into the present century. Lack of recent information makes it impossible to know whether this situation has changed. Majerus and Kearns (1989) do not consider the question of why H. 13-punctata may have become extinct in Great Britain and the only habitat information they give is that it is a "marshland" species. Harde (1984) says of this insect that it is "to be found in marshy meadows on bur-reed, rushes, sedge, reed-grass and willows". He also mentions its occurrence on Prunus species. Stanek (1984) refers to H. 13-punctata as a species of the lowlands, occurring in association with water, on fen vegetation and in osier (Salix viminalis) beds. Lyneborg (1977) states that "adults are active from April to September, and can be found along the edges of lakes, and in marshland.". These accounts agree in regarding H. 13-punctata as a wetland insect, but indicate it is more characteristically a species of fen than of bog. Indeed, the All Saints Bog record is the only indication that H. 13-punctata can occur in bogland. If it does occur in poor fen and transition

mires, it is surprising that no recent records are yet forthcoming from those types of site in Ireland. The most unusual vegetational feature of All Saints Bog is the birch woodland (Cross, 1987), but there is no clear indication that the presence of H. 13-punctata there is dependent on birch and no indication from the literature that H. 13-punctata has any association with birch. Majerus and Kearns (loc. cit.) point out that it is not known where H. 13-punctata overwinters, but Lyneborg (loc. cit.) indicates that adults can be found from the spring through to the autumn. Having visited All Saints Bog at dates from April through to September, but only having found H. 13-punctata there once, in September, when it was found in some numbers, though over a limited area, one wonders where the species was on other occasions! The apparent scarcity of this ladybird, the seeming atypicality of its habitat at its only known present-day Irish locality and its evidently secretive behaviour, make it an intriguing topic for study.

H. 13-punctata is illustrated in colour by Harde (1984), Lyneborg (1977), Majerus and Kearns (1989) and Stanek (1984). Majerus and Kearns (loc. cit.) state that the pronotum of H. 13-punctata has a "characteristic pattern". However, the pronotal pattern of H. 13-punctata as illustrated by the other authors referred to differs considerably from that shown for this species by Majerus and Kearns, so it is difficult to know what Majerus and Kearns mean by their statement. From other remarks they make it seem likely that Majerus and Kearns have based their observations on the appearance of the few British specimens of H. 13-punctata they have seen. The Irish specimens I have seen exhibit a pronotal pattern most similar to, but by no means identical with, that figured by Majerus and Kearns. Majerus and Kearns make no clear statement on the range of colour variation exhibited by this species, but Harde says "Although there are usually numerous black spots on the beetle's red elytra, the markings vary so that, at one extreme, the beetle can be entirely red or, at the other, completely

black". It is difficult to correctly name H. 13-punctata using the identification key based on colour characteristics provided by Majerus and Kearns (loc. cit.). In particular, it should be noted that the white marks on the elytra, flanking the black mark over the scutellum, fade after death in H. 13-punctata. However, these authors also provide a key based on structural features, which works quite well, though there are some problems with its use. For instance, the very first structural feature referred to in the key is the number of teeth on the mandibles. Since these teeth are not externally visible, from any angle, in a typical dried specimen, this means that it would be necessary to dismember the head of every ladybird examined, in order to name it! This hardly helps in the establishment of a reference collection! A second problem is how to interpret Couplet 6, which refers to "antennae short, two-thirds or less as long as the width of the head". Since the head varies considerably in width, from one end to the other, and the authors do not say whether they mean its maximum width, average width or minimum width, this feature is unuseable, except by those who already have correctly identified specimens and are thus not reliant on the key anyway. If the authors are referring to the maximum width of the head, then their statement is simply erroneous, so one has to interpret this feature otherwise. The key in Pope (1953) also uses antennal length, but presented in a somewhat more intelligible fashion. Indeed, except for introducing the horrid initial couplet referring to the mandibular teeth, the key in Majerus and Kearns (loc. cit.) differs little from that provided by Pope (loc. cit.), apart from in that Pope's key is more clearly written, for anyone wishing to identify a specimen of H. 13-punctata. But for identifying most ladybird species known from Ireland, Pope's (loc. cit.) keys are only to be recommended for masochists, and the charming colour figures provided by Majerus and Kearns (1989), used in conjunction with their keys, are much more reliable.

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The major components of the All Saints Bog insect fauna can be appreciated from examination of the species list given in the Appendix. Species recorded in the All Saints Bog lagg fauna comprise pasture insects like Pterostichus madidus (Fabr.) and Rhingia campestris (Meigen) together with some rather general wetland insects like Pterostichus nigrita (Paykull) and the various Eristalis species. Among them, only the wetland species Chrysogaster coemiteriorum (L.) and Eristalis abusivus Collin are in any sense noticeably restricted in distribution - both of these hoverflies, although widely distributed in Ireland, become very localised away from the atlantic seabord of Europe.

For the taxonomic groups sampled, the bog itself has a most limited fauna, with the sphagnum-choked hollows providing the only source of species with a high degree of habitat fidelity, personified by the dolichopodid Campsicnemus compeditus Loew. At the time this insect was added to the Irish list (Speight and Meuffels, 1989) I was unaware that specific collection methods were needed to reveal its presence. Since discovering how to find this fly I have recorded it from every bog I have visited. Although I would have to visit many more bogs than I have yet, in order to know whether C. compeditus is generally distributed on Irish bogs, certainly it now seems unlikely that this dolichopodid is under threat in Ireland, as it is supposed to be in Great Britain (Shirt, 1987).

The bulk of the All Saints Bog fauna is concentrated within and around the birch woodland. Some of the species, such as the ladybird Chilocorus bipustulatus (L.), are properly regarded as associated with the pines, but such species are very much in a minority. The rest of the birchwood fauna is more associated with the birches themselves and with the character of the ground layer. Interestingly, of the organisms most clearly associated with the

trees, none of the unusual species recorded feed on the foliage of the birch. The birch species of greatest interest are dependent upon the dead and dying wood of old trees. In this saproxylic category fall the longhorn beetle Leptura quadrifasciata (L.) and the click beetle Ampedus pomorum (Herbst), together with the tipulid Dictenidia bimaculata (L.). L. 4-fasciata is extremely scarce in Ireland (five previous records this century: Speight, 1988). D. bimaculata was only recently added to the Irish fauna (O'Connor and Speight, 1987), and, although more widely distributed here than was initially thought, is by no means a common Irish insect. Ground layer species of particular interest include Hippodamia 13-punctata, the hoverfly Microdon mutabilis (L.) and the click beetles Athous subfuscus (Müller) and Sericus brunneus (L.). M. mutabilis is predominantly an ancient pasture insect in present-day Europe, and as such is disappearing rapidly from much of its previous range on the continent. A. subfuscus is known in Ireland only from All Saints Bog (Speight, 1989), where it seems to occupy a rather open habitat similar to that in which it occurs on offshore islands north of Scotland (H. Mendel, pers. comm.) and quite different from the sort of situation in which it occurs in continental Europe. In Ireland S. brunneus appears to be largely confined to scrub-covered areas on bogs, but there are few Irish records. The only published Irish records of the dolichopodids Chrysotus blepharosceles Kowarz (Blackith et al, 1989) and Melanostolus melancholicus (Loew) (Speight and Meuffels, 1989) are from the birch woodland of All Saints Bog. These insects are not well known, but their development very probably takes place in the ground layer zone, also.

Saproxylics are in general very scarce in Ireland. The presence of a concentration of them in the birch woodland on All Saints Bog argues that this woodland is ancient. The spider Araneus umbraticus (L.) is just such an indicator of ancient woodland in

Ireland. The earthworm Eisenia eiseni (Levinsen) is a very particular case. This is one of a small group of earthworms which inhabit, by preference, rotten wood. In bogland in general earthworms are extremely scarce and usually entirely absent. Without the birch woodland, the occurrence of E. eiseni on All Saints Bog would be virtually impossible. The ground layer fauna is similarly indicative of a prolonged history of extremely stable site conditions within and in the vicinity of the woodland. The ant commensal hoverfly M. mutabilis, the beetle Malachius bipustulatus (L.) and the grasshopper Stethophyma grossum (L.) are examples. S. grossum is known from very few localities east of the Shannon (Foss and Speight, 1989) and is very localised in Ireland today. Altogether, it is possible than the All Saints Bog birchwood represents a relict Irish biotope, supporting at All Saints a more complete fauna than on other equivalent sites now left in the island. The particular combination of invertebrates recorded from All Saints Bog makes it a site of undoubted scientific interest at the international level, with most of that interest residing in the birchwood.

Acknowledgements

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Appendix: Insect species recorded from All Saints Bog, Co. Offaly

1 = bog/pasture transition zone: the "lagg", cutaway peat with pools and Salix scrub, edged on one side by the bog itself and on the other by poorly-drained pasture.
2 = bog: ericaceous shrubs predominant, with patches of wetter vegetation and shallow, sphagnum-filled surface hollows.
3 = birch woodland, invaded by pine in places and with extensive open areas dominated by bracken and tiny glades with deep moss and sedges.

COLEOPTERA
Attelabidae
Deporaus betulae (L.): 3.
Carabidae
Pterostichus madidus (Fabr.): 1; P. nigrita (Paykull): 1/3.
Cantharidae
Cantharis nigra (Degeer): 3; Rhagonycha lignosa (Müller): 3.
Cerambycidae
Leptura quadrifasciata (L.): 3; Rhagium bifasciatum Fabr.: 3.
Coccinellidae
Chilocorus bipustulatus (L.): 3; Coccinella septempunctata L.: 3; Hippodamia tredecimpunctata (L.): 3.
Curculionidae
Limnobaris pilistriata (Stephens): 3.
Elateridae
Actenicera sjaelandica (Müller): 3; Adrastus pallens (Fabr.): 3; Ampedus pomorum (Herbst): 3; Athous haemorrhoidalis (Fabr.): 3; A. subfuscus (Müller): 3; Ctenicera cuprea (Fabr.): 3; Dalopius

marginatus (L.): 3; Sericus brunneus (L.): 3.
Melyridae
Malachius bipustulatus (L.): 3.

DIPTERA
Anisopodidae
Sylvicola punctata (Fabr.): 3.
Conopidae
Sicus ferrugineus (L.): 1.
Dolichopodidae
Campsicnemus compeditus Loew: 2/3; Chrysotus blepharosceles Kowarz: 3; Dolichopus atratus Meigen: 3; D. atripes Meigen: 3; D. discifer Stannius: 3; D. lepidus Staeger: 3; D. vitripennis Meigen: 3; Hercostomus cupreus (Fallén): 3; Melanostolus melancholicus (Loew): 3; Sympycnus pulicarius (Fabr.): 2/3; Syntormon pallipes (Fabr.): 3.
Empididae
Kritempis livida (L.): 1.
Limoniidae
Erioptera lutea Meigen: 3, coll. and det. R. and R. Blackith; E. stictica (Meigen): 3, coll. and det. R. and R. Blackith; Limonia duplicata (Doane): 3, coll. and det. R. and R. Blackith; L. meigeni Verrall: 3, coll. and det. R. and R. Blackith; L. mitis (Meigen): 3, coll. and det. R. and R. Blackith; L. modesta (Meigen): 3, coll. and det. R. and R. Blackith; L. nubeculosa Meigen: 3, coll. and det. R. and R. Blackith; Molophilus ochraceus (Meigen): 3, coll. and det. R. and R. Blackith.
Opomyzidae
Opomyza germinationis (L.): 3.
Rhagionidae
Rhagio scolopacea (L.): 3; R. tringaria (L.): 3.
Scathophagidae
Cordylura pudica Meigen: 3; C.rufimana Meigen: 3; Scathophaga furcata (Say): 3; S. stercoraria (L.): 1/3; S. suilla (Fabr.): 3.

Sciomyzidae
Limnia paludicola Elberg: 3; Pherbellia cinerella (Fallén): 1/3; P. nana (Fallén): 3; Tetanocera elata (Fabr.): 3.
Stratiomyiidae
Microchrysa flavicornis Meigen: 3.
Syrphidae
Cheilosia illustrata (Harris): 1; C. vernalis (Fallén):1; Chrysogaster coemiteriorum (L.): 1; Eristalis abusivus Collin: 1; E. arbustorum (L.): 1; E. horticola (Degeer): 1/3; E. intricarius (L.): 1; E. pertinax (Scopoli): 1/3; E. tenax (L.): 1; Ferdinandea cuprea (Scopoli): 3; Helophilus hybridus Loew: 1; H. pendulus (L.): 1/3; Melangyna umbellatarum (Fabr.): 1; Melanostoma mellinum (L.): 1/3; M. scalare (Fabr.): 1/3; Microdon mutabilis (L.): 3; Neoascia podagrica (Fabr.): 1; N. tenur (Harris): 3; Pipizella viduata (L.): 2; Platycheirus clypeatus (Meigen): 3; P granditarsa (Forster): 3; P. rosarum (Fabr.): 1; Rhingia campestris (Meigen): 1; Sericomyia lappona (L.): 3; S. silentis (Harris): 1; Sphaerophoria philanthus (Meigen): 1; Syritta pipiens (L.): 1; Syrphus ribesii L.: 3.
Tabanidae
Haematopota pluvialis (L.): 1/3.
Tachinidae
Tachina grossa (L.): 1/2/3.
Tipulidae
Dictenidia bimaculata (L.): 3; Tipula marmorata Meigen: 3, coll. and det. R. and R. Blackith; T. obsoleta Meigen: 3, coll. and det. R. and R. Blackith; T. oleracea L.: 3, coll. and det. R. and R. Blackith; T. paludosa Meigen: 3, coll. and det. R. and R. Blackith; T. pruinosa Wiedemann: 3, coll. and det. R. and R. Blackith.

HYMENOPTERA
Apidae
Bombus muscorum (L.): 3.

Argidae
Arge ciliaris (L.): 1.
Crabronidae
Crabro peltarius (Schreber): 1.
Tenthredinidae
Dineura viridodorsata (Retzius in Degeer): 3; Dolerus aeneus Hartig: 1.

ODONATA
Aeschnidae
Aeschna juncea (L.): 3; Brachytron pratense (Müller): 3.
Coenagriidae
Pyrrhosoma nymphula (Sulzer): 1/3.
Libellulidae
Sympetrum striolatum (Charpentier): 2.

ORTHOPTERA
Acrididae
Stethophyma grossum (L.): 3.
Tetrigidae
Tetrix undulata (Sowerby): 3.

TRICHOPTERA
Limnephilidae
Limnephilus affinis Curtis: 3; L. auricula Curtis: 3; L. vittatus (Fabr.): 3.

Other invertebrates
ARANAEA
Aranaeidae
Araneus umbraticus (L.): 3.

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LUMBRICOIDEA
Lumbricidae
Eisenia eiseni (Levinsen): 3.

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BOOK REVIEW

PROVISIONAL ATLAS OF THE CLICK BEETLES (COLEOPTERA: ELATEROIDEA) OF THE BRITISH ISLES.

H. Mendel

89pp. Published by the Biological Records Centre, 1988. £4.00 Stg. Available from I T E Publications, Merlewood Research Station, Grange-over-Sands, Cumbria, England LA11 6JU.

P. M. Hammond (1974), discussing changes in the British beetle fauna, commented: "The most intensively recorded [beetle] species so far mapped is known from only 366 squares and the real information content of such maps compared with alternative forms of presentation (e.g. maps based on vice-counties; 50km squares) has yet to be fully evaluated. However, the value of data-gathering schemes cannot be assessed purely in terms of cost-effectiveness in production of preliminary distribution maps. More important features are the provision of a framework for the long-term accumulation of distributional data which would otherwise be lost, encouragement of interest in the group, and the provision of a vehicle for the accumulation of badly needed data on usual habitats, seasonal occurrence, etc." With these points in mind, this publication is especially welcome, given that click beetles are, apart from their intrinsic interest, particularly useful as ecological indicators, and also include some notable crop pests.

Records are given for the 82 species recorded from Britain and Ireland, and presented in 10km grid maps. Records are also presented, very usefully, for vice-counties in tabular form, but these are not just alternative forms of presentation, as

several pre-1950 vice-county records are not listed in the 10 km maps, due to the poor locality information associated with such records. Zorochros minimus (Boisduval and Lacordaire), for instance, has been recorded from 11 Irish vice-counties, but has only six 10km records.

Several species are not mapped, due to so few records. Zorochros flavipes (Aubé) records are included within the map for Z. minimus, but not clearly distinguished, which is confusing. Several published Irish records are missing: e.g. Agriotes lineatus (L.) from Bull Is., Dublin (Healy, 1975), six species from Cloghane, Co. Kerry (Tomlin and Joy, 1914), Athous campyloides Newman from Clontarf, Dublin (O'Mahony, 1929). These references are listed in Ryan et al. (1984), and should have been included. The fact that National Museum of Ireland specimens have not been checked prior to publication, however, detracts from the value of the records presented, but as Mr. Mendel has recently examined the collection, it is hoped that this problem will be rectified in a future atlas.

What is clearly shown is that the Irish data are pathetic. The 23 species recorded as Irish (only 28% of the British fauna) have, on average, 4.7 10km records each (the maximum for any species is 13). That this paucity of information should encourage an interest in the group is obvious, but as mentioned in the foreword, "... there are no reliable keys published in English to all the species of the British Isles, and many species are difficult to find or are apparently rare or localized." Unfortunately, anyone inclined enough to use continental keys find them absent from the references list, and any differences in species concepts between British and continental keys are not mentioned. References to, and records of, elaterid larvae and their pest status would also have contributed to the applied value of such a publication, as

would basic habitat information.

These comments aside, the atlas is a worthwhile start to collating data for this group, despite its Irish data being indeed 'provisional'. It is well presented and bound, with spine title, and being A5, nicely shelvable.

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Jervis Good

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INSTRUCTIONS TO CONTRIBUTORS

1. Manuscripts should follow the format of articles in this Bulletin.

2. Manuscripts should be submitted as typed copy on A4 paper, using double-spacing and 2.5cm (1 inch) margins.

3. Figures should be submitted in a size suitable for reduction to A5 without any loss of detail.

4. Records: please ensure that, when possible, the following information is incorporated in each record included in a manuscript:-
(a) latin name of organism.
(b) statement of reference work used as the source of nomenclature employed in the text. The describer's name should be also given when a zoological species is first mentioned in the text.
(c) locality details including at least a four figure Irish grid reference (e.g. N3946), county, vice-county number and some ecological data about the collection site, plus date of capture.
(d) collector's name and determiner's name (where different from collector's name), and
(e) altitude data should be included where relevant.

5. Manuscripts should be submitted to the Editor, Dr J. P. O'Connor, at the following address:- National Museum of Ireland, Kildare Street, Dublin 2, IRELAND.

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